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MODEL RAILWAY JOURNAL

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54

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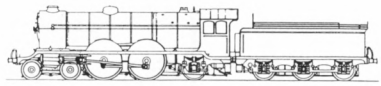

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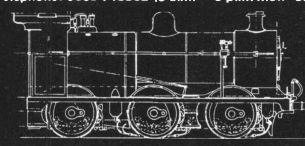

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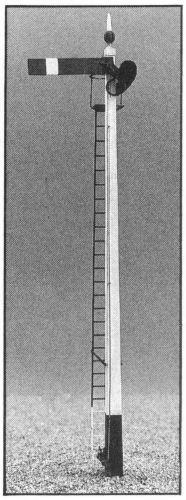

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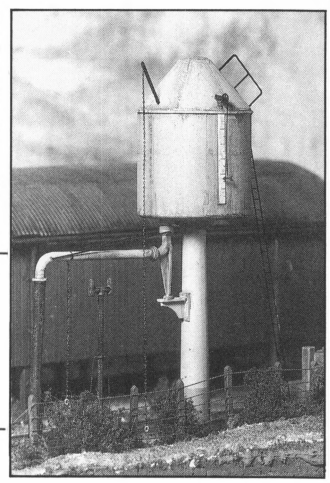

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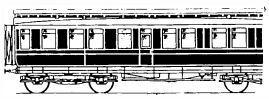

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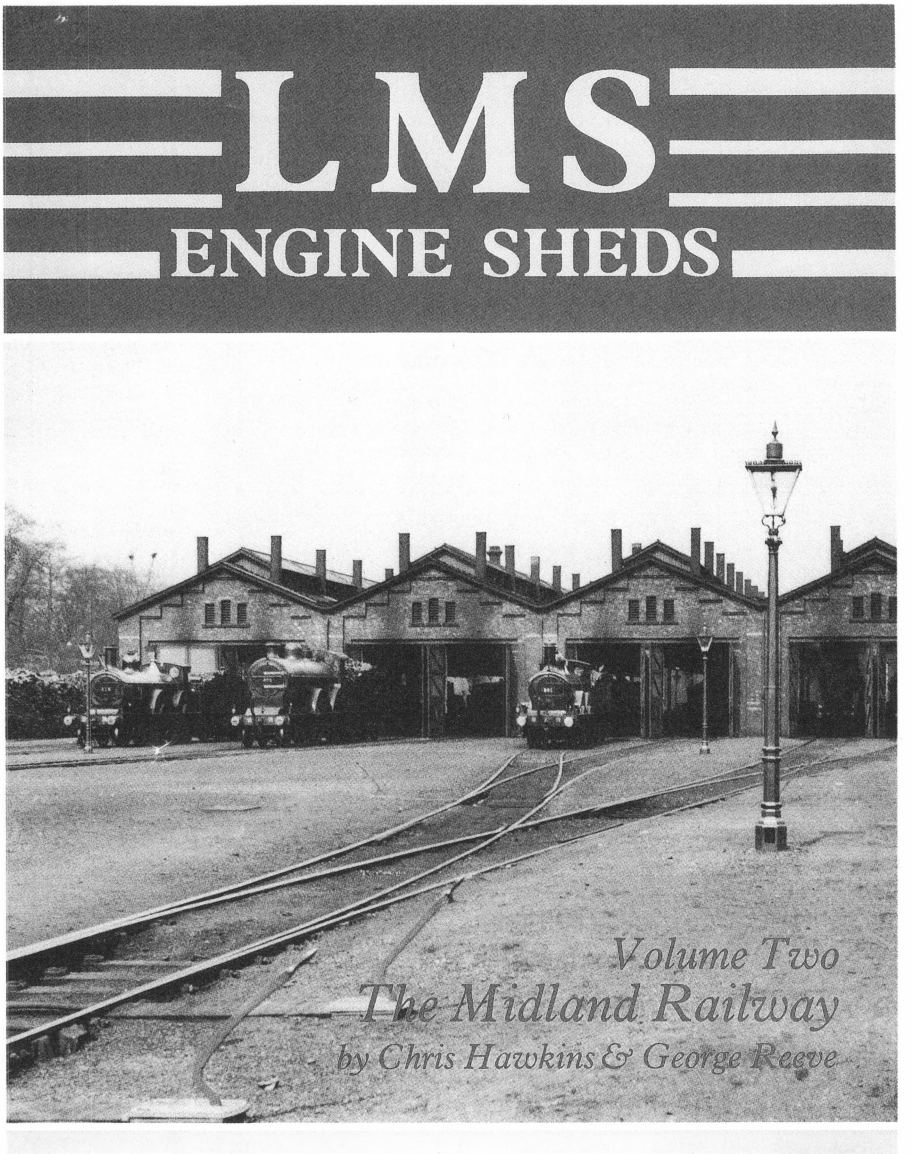


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# MODEL RAILWAY JOURNAL

ISSN 0267-3207 No. 54. 1992

Edited by Bob Barlow. Designed by Paul Karau.

## The Kit Roll of Honour

It has been pointed out, with some justification, that we bang on quite a bit about the quality of the etched kits produced by Malcolm Mitchell and Martin Finney. Indeed, the M & M Factor – as Iain Rice so succinctly described it in a recent society journal – is something that few etched kit fans, especially those with a GWR bent, can fail to have missed.

The reason for our eulogising is simple: Mitchell and Finney kits, whilst probably not quite perfect, are as near to state-of-the-art as you can get. They're beautifully engineered, have full and understandable instructions, they go together and actually capture the character of the prototypes they're supposed to represent. Hardly surprising, therefore, that we should keep on holding them up as exemplars to the rest of the finescale trade.

Well, we've been holding them up and waving them about and pointing to them for some time now and, to be frank, were beginning to think it was a pointless exercise. Until now, that is.

Another manufacturer, Brassmasters, has joined the club. As you will see from Allan Sibley's extended review in this issue, the new management at Brassmasters has turned out a first kit which has everything (and possibly even a little more) than a M & M kit. The only difference – clear your throats for a good loud cheer – is that Brassmasters are LMS people, not stuck in God's Wonderful Rut. Their first model, a 'Jubilee' 4–6–0, is an absolute knockout and a tribute to a team of manufacturers prepared to do their homework, listen seriously to the demands of modellers and pull as many threads together as possible *before* putting their product on sale. What's more, they are actively asking for customer feedback, and early signs are that they are acting upon it.

There are arguments emerging – many of them valid in our opinion – that complex, high-tech kits which set new standards of accuracy and detail bring with them problems of consistency for modellers who have invested years of work in models and layouts built to lesser standards. But these assume that the finished result is the be-all and end-all of kit-making. Our view is that the actual building work should be a joy to do, with the finished product being the icing on the cake. On this basis, more kits might actually get finished and standards rise by their own impetus.

So far as we are concerned, the news from Brassmasters is good and it is to be hoped that they will be the first of many to join the etchers' roll of honour. *Bob Barlow*

**IMPORTANT ANNOUNCEMENT**

*As this issue went to press in mid-March, we learned the devastating news that for the second time in MRJ's existence, our distributors have folded. At the time of writing, we have no way of knowing how and when this issue will reach you, if at all, nor what the implications are for the future of MRJ or Wild Swan Publications as a whole.*

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## CONTENTS

AN ADVANCED 4MM JUBILEE *by Allan Sibley* .. .. .. .. .. 82
IMREX '92 .. .. .. .. .. .. .. .. .. .. 89
MAIDSTONE ROAD *by Les Darbyshire* .. .. .. .. .. .. 90
SMALL SUPPLIERS FORUM .. .. .. .. .. .. .. .. 102
NO. 1 SHOP .. .. .. .. .. .. .. .. .. .. 105
MINERAL WAGONS PART 1 *by Peter Totman* .. .. .. .. .. 111
LETTERS .. .. .. .. .. .. .. .. .. .. 117
DIARY .. .. .. .. .. .. .. .. .. .. 120

MRJ No. 55 should be on sale on 14th May 1992

*Cover photo: The new Brassmasters 'Jubilee'.* ALLAN SIBLEY

Published by Wild Swan Publications Ltd., 1-3 Hagbourne Road, Didcot, Oxon OX11 8DP
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# An Advanced 4mm Jubilee

**ALLAN SIBLEY builds a kit with everything – and a bit more, such as duplicate parts in 'scale' and 'robust' varieties. It took 170 hours, but the result is impressive:**

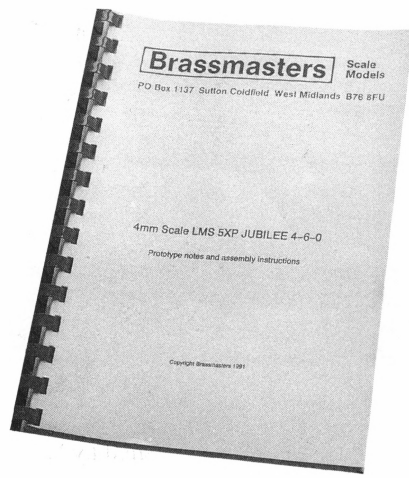
Photos: AUTHOR & TONY SMITH

Many readers will be aware that my output of kit-built locomotives is somewhat higher than that of the average modeller, and that a selection have been the subject of articles in previous issues of MRJ. Some of those kits were bad, some were good, and a few were exceptional – in both extremes! The Brassmasters kit for the LMS 'Jubilee' 4–6–0 is by some considerable margin the best to date. It was at the same time one of the most difficult and one of the easiest to build (which may sound contradictory but isn't – read on!). It was also the most time-consuming, beating the previous record-holder – the DJH LNER 2–8–8–2T Beyer Garratt – by about 15 hours.

The 'Jubilee' is, to the best of my knowledge, the first completely new kit to be produced by the present Brassmasters team, the existing range having been taken over from the former proprietors. John Jennison did warn me that the team were 'learning the job'. He also said that any feedback during construction would be welcome for incorporation in further batches of this kit and for future kits, and that if I encountered any problems he would do his best to help. Well, there were one or two areas where this liaison paid dividends for both parties, so I wish to record my thanks to John and colleagues for their assistance (and in the hope that the feeling is mutual).

I took delivery of the kit late on the Sunday of Scaleforum 1991 and had time only for a quick look inside the smart black cardboard box in which it was packed. The favourable impression created by the packaging was enhanced as I flipped through the instruction book (for it is nothing less than a book) and surveyed the brass and nickel-silver frets. It occurred to me then, as it did later at home when I was laying out the frets for the photos, that this kit should be displayed unmade in a frame, since it is a work of art in itself! However, needs must when the devil drives – the devil in this case being Mr. Barlow wanting a review, and so it was that the 'Jubilee' jumped the queue in the 'awaiting works' pile in my workshop. If the truth be told, I was also pretty keen myself to see the finished model!

The instructions come in book form: an A5 spiral-bound volume which has a very professional look and feel. No scruffy photocopied pages here! The introduction contains the phrase 'if you need any help . . . do not hesitate to contact us', which is a reassuring touch. The first 23 pages are packed with facts you never realised you needed to know about the prototype. I suppose it should come as no surprise that the 'Jubilees' were far from standardised, and this section deals with everything from the major differences in fireboxes, boilers and tenders, to variations in the number, size and type of rivets on the bufferbeams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4mm Scale LMS 5XP JUBILEE 4–6–0
Prototype notes and assembly instructions
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– rivet-counters please note! About half the information is in tabular form which is probably the easiest means of presenting the data. Not being an LMS man, I am unable to vouch for its accuracy, but the names of several eminent members of the LMS Society appear in the acknowledgements so I have little cause for doubt in this respect.

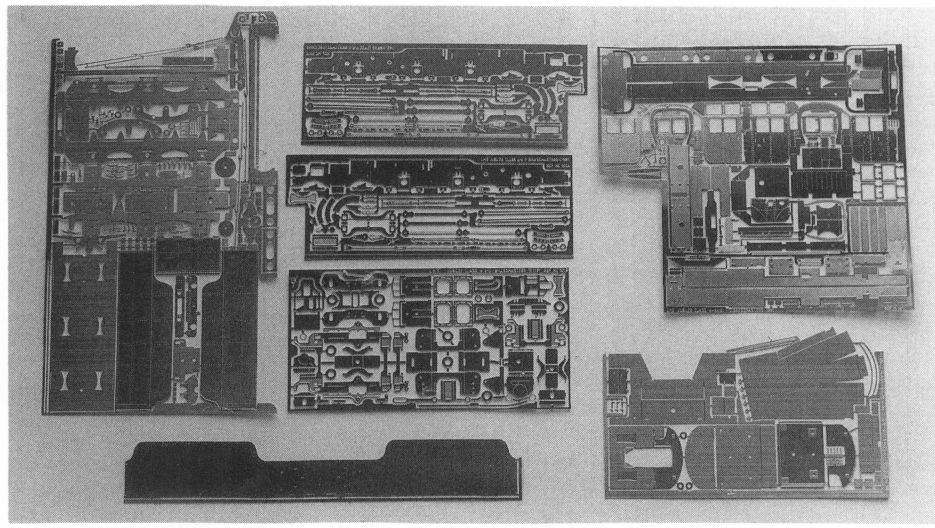
The assembly instructions occupy a further 13 pages of closely-typeset text, followed by a six-page parts list. The tender is dealt with in a similar but smaller book, which covers both riveted and welded tenders together. In this respect I found the construction notes rather confusing at times. The welded tender has some riveted parts which have to be applied separately, whereas the riveted tender has them already etched on the main component. Two sets of notes – one for each type – would have been much easier to follow.

Having attempted a similar exercise myself, I am aware that a great deal of time and effort has been put into the research and production of the instructions for this kit. However, it has to be said that there are gaps in both words and drawings. Fortunately, I was armed with some 75 very detailed photographs of the three preserved examples, plus a number of books containing photos of various members of the class including both sides of the chosen locomotive in the correct period.

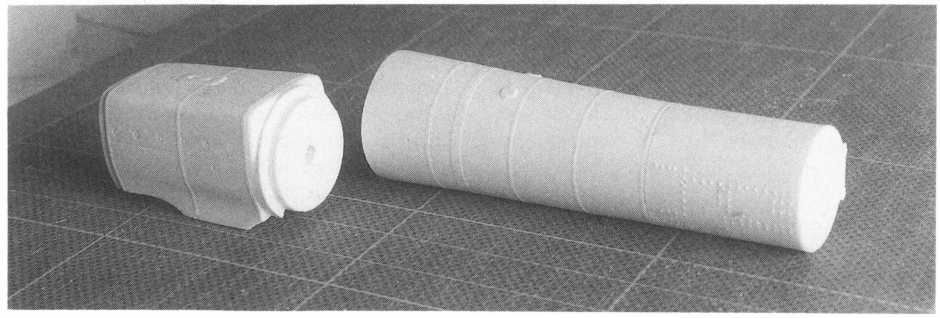
Separate A3 size sheets are provided for J. F. Henderson's scale drawings of the locomotive and tender. The loco drawing shows prototype dimensions but is not scaled – in fact it is to a scale of 5mm/ft. The tender drawing is annotated as being to 4mm/ft scale but is not; the 10ft scale line measures 44mm. The tender drawing is not as clear as that of the locomotive and I found some difficulty in deciding what went where on the tender front. A4 paper copies of the uncut frets are supplied, with part numbers, together with assembly diagrams for the chassis, bogie and valve gear. The use of separate sheets is a good idea as it allows both the instructions and the diagrams to be visible on the bench at the same time.

The instructions have been improved since my kit was produced and Brassmasters have the addresses of all purchasers so that updates can be provided.

The kit provides many alternative components to cater for minor variations, but due to the major differences in the prototype noted above and the method of producing the kit, the customer has to specify the type of locomotive required (short or long firebox). At present only the 4,000 gallon tender is available (riveted or welded from the same kit) but when other types are produced it will also be necessary to quote the tender type. Mine was to be 45595 *Southern Rhodesia* in later BR days, having a short firebox with straight throatplate and domed boiler.



*The etched components for the locomotive and tender.*



*The resin-cast boiler and firebox.*

The most noticeable feature of the kit is the use of cast resin to provide a one-piece boiler/smokebox and separate firebox. These components overcome the difficulties of forming a tapered boiler and reverse-tapered Belpaire firebox from sheet metal, and are far superior to white metal castings; the boiler is completely circular for a start, and together with the firebox carries particularly fine detail. Cast resin can be filed and cut very easily, a process producing a pleasant aroma (reminiscent of the disinfectant used in my local hospital). Of course, resin components cannot be soldered but cyano adhesive is very effective. One minor disadvantage is that resin is comparatively light and although there is room for a slug of lead in the tapered section of the boiler, it is preferable to add weight elsewhere wherever possible.

The majority of the other body components are etched in a fairly soft 10-thou brass, densely packed in the frets. Many of the smaller parts are very delicate and, with minimal tabbing, extreme care is needed in handling part-cut frets to avoid accidental bending. The frets in my sample were completely free of acid stains and other blemishes. No component numbers are etched on the frets, hence frequent reference to the paper copies is required. Some components are found in more than one location (e.g. footsteps) and the smaller ones take a while to locate on the paper copies!

The locomotive chassis is 20-thou nickel-silver. Alternative spacers and other components are provided for 16.5mm and 18/18.83mm gauges. The 'other' components include the inside motion bracket, inside cylinder front, bogie support plate, and lower drag-box plate. The brake hanger brackets and certain parts of the valve gear are duplicated in both 'scale' and slightly overscale sizes, the latter being more robust. I did intend to use the 'scale' components but due to very slight over-etching, most suffered from breaking-out of the rivet holes while being cleared to accept the rivets. Brass bearings and springs are supplied for the locomotive coupled wheels.

Lost wax castings are supplied for the crossheads and vacuum pump (nickel silver) and cylinder drain cocks and pipes, bogie equalising springs, valve spindle guides and safety valves (brass). All other castings are in whitemetal; these include the inside cylinder and water scoop – components not often found in kits in which they should be provided. Quality is generally very good, my only minor quibble being that the piston rods, cast integrally with the crossheads, were distorted and not that easy to straighten. Again, several alternatives are included where applicable – three types of chimney, two varieties of left-hand crosshead (one to drive the feed pump where fitted, one plain), smokebox saddles (early and later) and sandbox fillers. The smokebox door handles and whistle are turned brass, and the component list is completed by sprung buffers, handrail knobs, split pins, rod, wire, nuts, bolts, valve gear rivets etc.

The tender is formed entirely of brass, and can be built as either riveted or welded. All castings except the scoop/handbrake handles are in whitemetal. Correct chassis cross-members are provided.

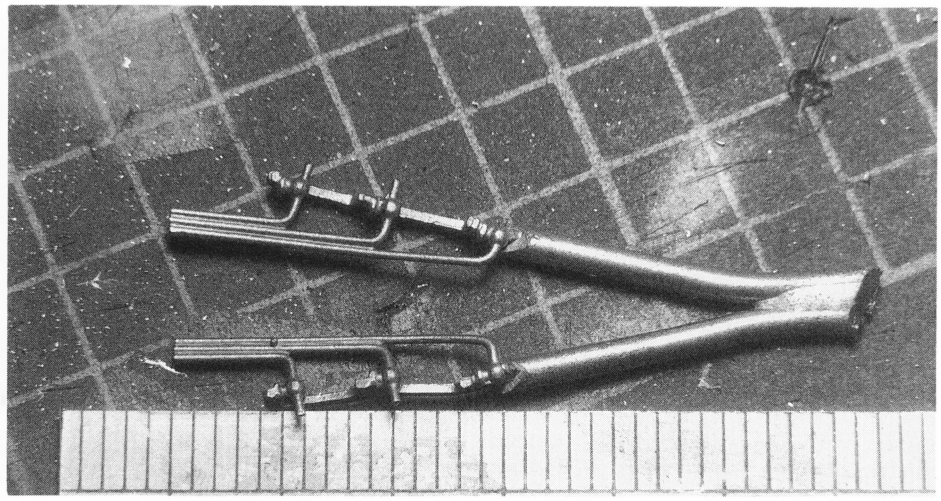
The builder is required to supply wheels and motor/gears. The instructions recommend an Escap 1624 driving the centre or rear coupled axle. I used the smaller but adequately powerful 1616 to enable extra weight to be added between the motor and firebox backhead. The instructions carry no recommendation for wheels – both Ultrascale and Alan Gibson produce 6ft 9in 21-spoke drivers and I used the latter.

One aspect of construction which these instructions fail to include (and this is common to many kits) is the necessity for painting of certain parts during construction. For example, the chassis sequence makes no mention of the fact that the frames need to be painted before finally fitting the wheelsets and axlebox keepers.

Finally, do read the instructions for each whole section before starting construction of that section. In some instances a note at the end of a paragraph refers to the beginning thereof, and if you build 'a sentence at a time' you may find a note telling you not to do something you've just done (or vice versa)!

## THE LOCOMOTIVE CHASSIS

The first decision to be made is whether the chassis is to be built rigid, sprung or beam compensated. The frame sides are supplied for 'rigid' use, with half-etched sections (called 'scrap-plates' in the instructions) which have to be removed for compensation. The axleboxes slide in the frames themselves – there are no separate hornguides – so the removal of the scrap-plates and subsequent filing of the slots does introduce scope for discrepancies between the centres of the axles and the coupling rods. Bearing in mind that most modellers building a kit of this calibre will opt for some form of compensation, I would have thought it better to omit the scrap-plates and provide conventional hornguides which can be jig-set to an exact match to the coupling rods.



*Quality of the castings is exemplified by the cylinder drain cocks.*

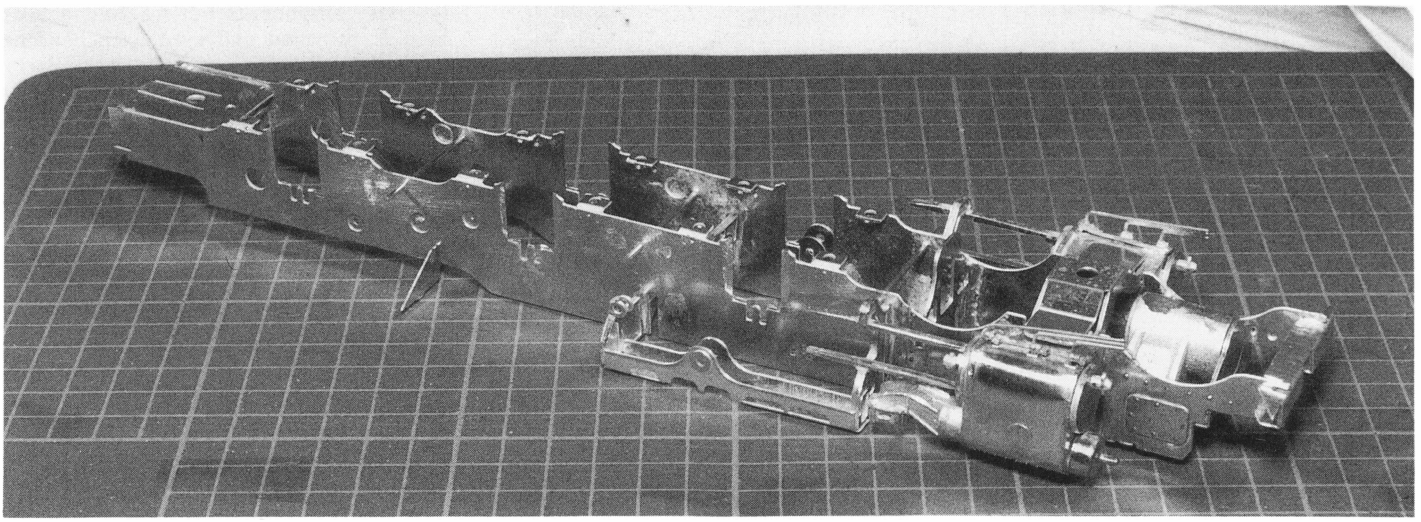
The kit does not include components for Flexichas beam compensation of the locomotive chassis. It does include coil springs, the recommended method being that the 'normal' position is with the springs partly expanded – i.e. with the axleboxes at the halfway point in a total vertical movement of 1mm. For this to be the case it is necessary for the loco to be weighted within fairly close limits, and for that weight to be evenly distributed. The instructions contain reference to the fact that this is how the prototype works. However, the prototype does have the advantage of accurate weighbridges and spring adjusters to facilitate such setting-up. My own views on springing have been previously expressed; it is sufficient to say here that I opted for springs, but weaker ones to allow the axleboxes to sit at the top of the slots as per normal (model) springing practice.

It is recommended in the instructions that the axleboxes be matched to individual slots. I found this to be essential, as the dimension over the grooves of the axleboxes in my kit varied considerably – the smallest was 0.5mm less than the largest.

The chassis is not simply two flat bits of nickel-silver with a few spacers in between. The frame sides carry a considerable amount of rivet detail which has to be formed with a punch, and the cross-members – correct in shape, size and location – are mostly formed by laminating two layers together. The finished chassis does look superb, and it seems such a pity that all that rivet detail will be half-hidden by paint, wheels and the shadow of the running plate! One minor amendment to the instructions is worth a mention – it is not necessary to separate parts B21 and B22 of the motion bracket before fitting.

In general I followed the construction sequence as given in the instructions, with one major exception. It is far easier to fit the brake shoes, hangers, brackets and sandpipes before all the motion gets in the way. Also, the hangers should be fitted before the brackets as the latter are on the outside of the hangers. As noted above, certain parts of the brake and valve gear are duplicated in 'scale' and 'robust' versions. I used the latter: the difference in ease of use is considerable but in appearance, especially when weathered, is minimal.

The cylinder and slidebar assembly is somewhat complex and time-consuming, and care is needed at every stage to fully understand and follow the instructions. However, the section on cylinder assembly stops halfway through the sequence and the builder is left to his own devices. The remaining steps are fairly obvious but nevertheless it is a notable omission. After the slidebar unit is fitted to the cylinders there is a portion of metal left which I found necessary to remove in order to clear the piston rod. One aspect of the cylinder assembly which warrants special mention applies also to many of the body components – the formation of rivet detail. There are numerous components, including the cylinder wrappers, on which rivet detail is formed by punching half-etched



*The locomotive chassis ready for painting. Note the fold-over tabs to take the (dummy) leaf spring castings.*

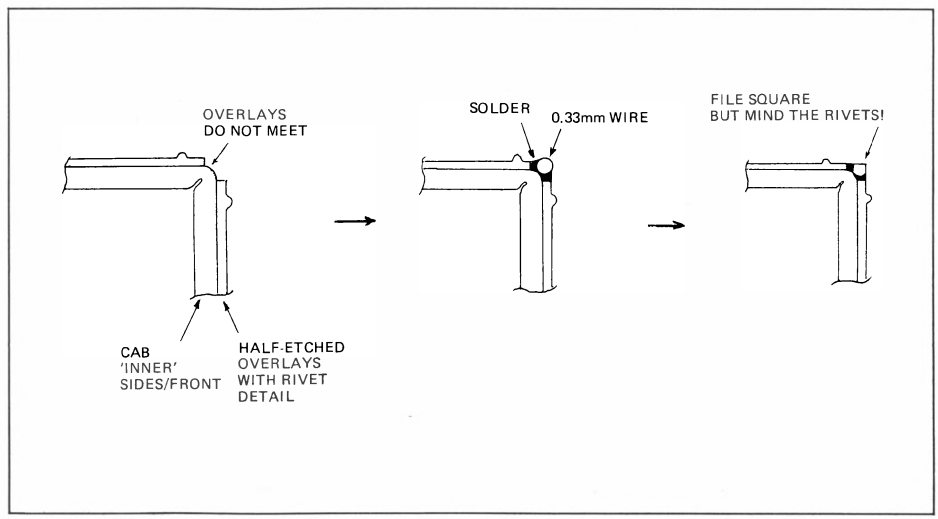
indentations from the back using a punch, old scriber, etc. This must be done with extreme care where rivets are very close to edges because distortion can easily occur.

Among the components not mentioned in the instructions is a lump of whitemetal looking something like a high-heeled shoe. It is in fact a combined ashpan and weight block, and is best fitted between the frames before the brake rigging goes in.

## LOCOMOTIVE BODY

As with the chassis, construction of the body needs to be undertaken with care as there are some areas where Brassmasters have opted for a slightly unconventional, if effective, approach. Such is the case with the footplate, where in the absence of a diagram it is difficult to fathom out what to bend when and how to achieve the desired result.

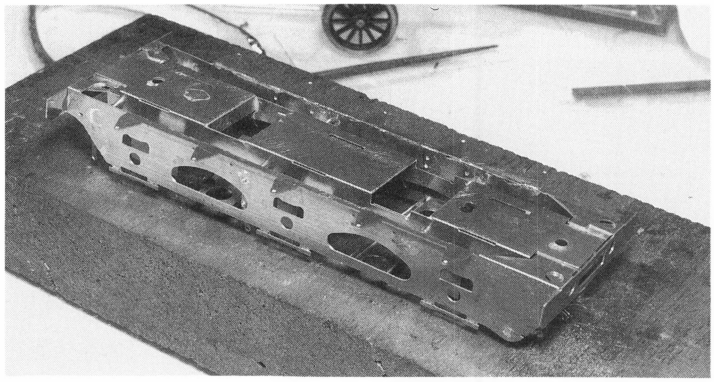
Perhaps the most mysterious aspect of this kit concerns the cab. A one-piece etching is supplied for the front and sides, containing a multitude of half-etched indents for 'punch-formed' rivets. However, there are also optional half-etched overlays with rivet detail far more accurate than could be achieved by the punch method and I doubt whether anyone will not use them in preference. The only problem is that the use of the overlays does increase the width of the cab – not significant in terms of overall width but it does affect the relationship between the cabside and the footplate valance. The cab front overlay is marginally too narrow and therefore does not form a proper corner joint with the cabside overlays. I cured this with 0.33mm brass wire (see diagram) but care is needed with the filing to avoid damaging the rivets.

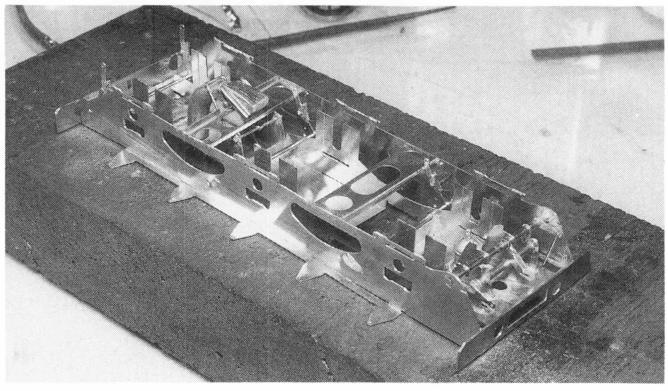



One of the areas where this kit took considerably more time than most was the cab; operating tip-up seats and sliding cabside windows are not found in most kits, and the same applies to such things as damper levers, flame guard, tool box and riveted reversing lever support. The firebox backhead is nicely detailed, although the distinctive brass handwheels are represented by castings with indents which are intended to be filled with brass paint to represent the spokes. I decided to fit the very nice etched brass handwheels which were spare from an LNWR G2 kit, also from Brassmasters. I was a little surprised that etched handwheels weren't included here.

Planning ahead for painting, I omitted the ejector, reversing rod and the AWS reservoirs; if fitted, the latter will prevent lining the rear splasher. The front sandbox fillers are in line with the lining band between the smokebox and boiler and are also best left until the boiler bands have been lined.

*The cab interior: tip-up seat tipped and sliding window slid!*





Above: *Top view of the tender chassis.* Right: *Underside view of the tender chassis showing the prototypical framing and the wealth of brake and water scoop detail.*

## THE TENDER

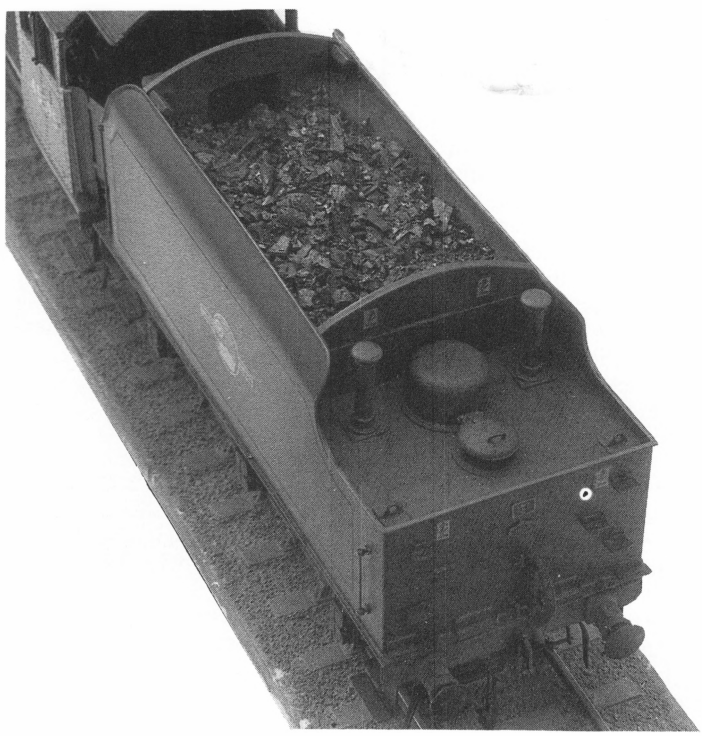
As noted earlier, the tender components include correct framing and a water scoop. There is also full brake rigging complete with bell cranks, rods, supports, etc. In most kits the tender front is a single casting which can be fitted in a few minutes but the Jubilee's tender front comprises numerous separate components, including the prototypical but rarely modelled lamp irons for spare lamps. Assembly and fitting of the tender front alone consumed five hours!

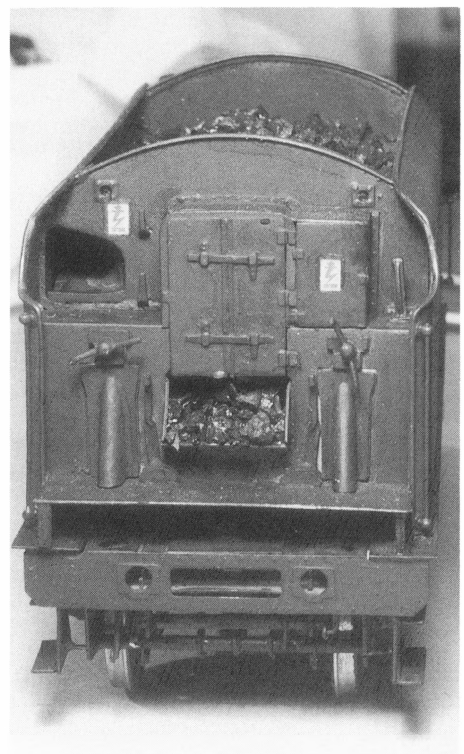
The major problem with the tender was forming the inward curve of the sides from the flat components supplied. Correct positioning and formation of the bend is vital to the subsequent fit of the interior components but no guidance or help is provided and even with bending bars – something which not every modeller possesses – it is a difficult operation. Some help from the manufacturer is required here – possibly some half-etched lines on the inside to assist bending or, even better, pre-folded sides.

I made two main departures from the instruction sequence for the body. The first was to fit the (rear) top lamp iron, steps and handrail knobs before assembling the main body; by this means it was possible to solder the components from inside the body. The second concerned the beading round the edges of the sides and rear (applicable only to the welded tender). The beading is formed by filing 0.45mm brass wire to half-round section, then bending and soldering to the body. The instructions show this step after the fitting of the castings to the tender top (vents, scoop dome and filler) but in fact these components get in the way of the soldering iron when fitting the beading and the file/emery when finishing off. They are best omitted until after completion of work on the beading.

LMS locomotives in crimson lake livery had the tender frames painted lake and lined, with lining extending behind the footsteps. Those modelling a loco in this condition may wish to leave fitting the steps until after painting.

Rather strangely, bearing in mind that the loco is sprung, the tender is intended to be Flexichas compensated with a





*Tender front.*

'fixed' rear axle and two beams for the front and centre wheelsets. This would give four-point suspension which is not ideal. I opted for springing using phosphor bronze wire bearing on the axles.

Bearing in mind the considerable amount of detail included in the tender, I was somewhat surprised to find that there were no works or capacity plates for the tender back. I found some spares from a previous kit (the Model Loco/DJH 'Duchess').

## FINISHING

Photographs of 'Jubilees' are fairly easy to come by, mostly in monochrome but the Colour-Rail range of duplicate slides includes many colour views, as do the series of *Steam In Colour* books published by Jane's.

Painting followed my conventional process (described in these pages before) with one exception. It seems that since Precision Paints were taken over by W & H Models, the excellent Quick-Air-Drying thinner is no longer produced. Certainly there is none to be had at W & H's London shop and requests for it have met with blank looks from the staff. Lighter petrol is a common and perfectly adequate substitute, but the fumes are dangerously flammable – don't risk it. The name, smokebox door and shed plates came from the King's Cross range, still available but these days from Chris Crawley Models of Spilsby, Lincs. The reversing rod and other omitted fittings were added, together with the glazing including the sliding cabside windows. The loco is in an 'oily-rag' and slightly weathered condition.

## CONCLUSION

During the construction of *Southern Rhodesia* I kept a fairly accurate record of the hours involved and the number of components included, the latter not including layers of paint or transfers! It makes interesting reading:

| | |
|---|---|
| Construction/painting hours: | |
| Locomotive | 115 |
| Tender | 55 |
| Total | 170 |
| Components: | |
| Loco chassis (inc wheels, etc) | 185 |
| Loco body | 188 |
| Tender | 194 |
| Total | 567 |

In my introduction I made the apparently contradictory remark that the 'Jubilee' was the most difficult and the easiest kit to build. It was difficult in that there were so many small components to be fitted; in this respect an Exactoscale resistance soldering kit (reviewed by Iain Rice in MRJ No. 51) proved invaluable. However, in the absence of exploded diagrams or sketches it was only by reference to the detailed photos that I found where most of them were supposed to go and most modellers will not have access to such information. I also found the instructions to be a trifle confusing or lacking in some places. On the other hand, all the components (with the exception of the cab sides/front) fitted absolutely perfectly, and there are precious few kits of which that can be said! For that reason I found it an extremely satisfying and enjoyable kit to build.

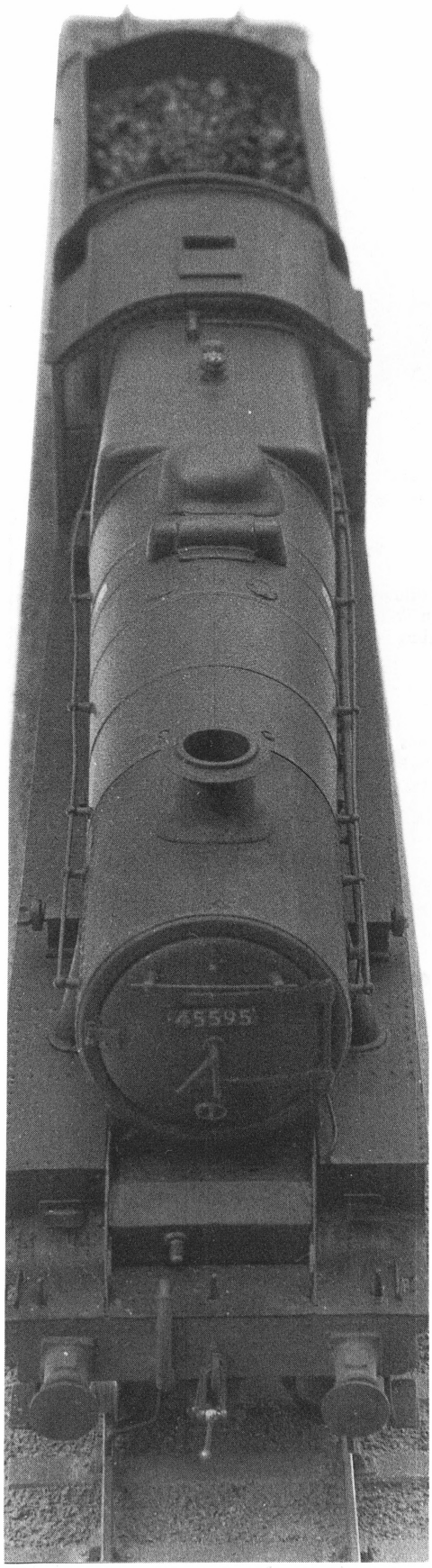
Because of its no-compromise accuracy in terms of clearances, the loco does not take kindly to sharp curves. It will just about negotiate a 4ft radius curve which is equivalent to the prototype's minimum radius of 4.5 chains (gauge widened and DEAD SLOW, according to the BR weight diagram). Like the prototype it is much happier at 6 chains (5ft) and above.

The Brassmasters 'Jubilee' is not for the inexperienced, but for those who are familiar with etched kit construction it has my highest recommendation, and I look forward to building further kits from this manufacturer.

Finally, I sent this review to John Jennison of Brassmasters to give the manufacturer an opportunity of commenting on my findings, and these are as follows:

## MANUFACTURER'S COMMENTS

Allan's review (*writes John Jennison*) was certainly thorough and thought-provoking. We are obviously pleased that his conclusion suggests we came within reach of our objective to produce a kit which utilised state-of-the-art techniques to enable the experienced modeller to produce a model which is as close to the prototype as possible. The length of time




taken to build the kit reflects the amount of detail required to model a complex prototype. We wonder how much longer Allan would have taken if the boiler and firebox had not been cast!

We have been conscious of the recent comments in MRJ about the quality of kit instructions and have tried to provide as much written detail as possible, backed with diagrams to clarify the more complex areas. We have not produced overall exploded diagrams for obvious reasons – 567 components may have made these slightly difficult to draw and even worse to understand. Allan's kit was collected when the instructions were hot off the press and contained one or two typographical errors. The diagrams have since been redrawn and supplemented.

We accept that the tender construction notes can be clarified by separating the notes for the riveted and welded types and this will be done for the next batch of kits.

James Henderson's excellent GA drawings were included as a reference aid and not as scale diagrams. They were enlarged up to the maximum size which would fit onto A3 paper and are approximately 25% above 4mm scale. We recommend the use of photographs to clarify areas of detail such as the tender front and cab interior; there are plenty of these in available published material.

As Allan pointed out, the 'Jubilee' is the first new kit from the current Brassmasters team and we admit to a certain amount of experimentation. We therefore included a choice of scale or robust components for some of the very small details, and push-through or half-etched rivets for other parts such as the cab overlays. Our next kit, the Stanier Black 5, will have fewer alternatives in line with Allan's comments. The problems he experienced with the scale components suggest we have probably reached the limits of existing photo-etching technology, and pushing through scores of rivets on the cabsides is a task most modellers will happily forego. We are considering whether we can improve other aspects of the parts supplied, and the piston rods may be formed from stainless steel wire cast integrally in the lost wax process.

Our main area of disagreement with Allan is the locomotive chassis and the method of suspension/compensation. We designed a sprung chassis based on the simple and robust system found on many Japanese brass locomotives and are slightly disappointed that Allan did not build as intended. Our prototypes certainly worked well 'as supplied', particularly when fully weighted (approximately 12 ounces with a boiler full of lead and more than adequate for normal load haulage). We would point out that the 'scrap plates' are there for rigid chassis fans; for those who favour beam compensation the axle holes in the plates align the frames while they and the beams are drilled for pivots. The plates themselves are simple to remove and reveal a standard 6mm cut-out to accept any of the proprietary hornblock systems.

The order of construction of the locomotive chassis can be varied slightly. The brake hangers should be fitted first but by leaving them loose on the support wires and retained by the brackets, their position can be more easily adjusted while the tie rods and pull rods are being fitted. We assembled all the valve gear and had the chassis running smoothly before removing the cylinder/valve gear assembly and fitting the brakes. Note that the cylinders/valve gear were designed so that they form a unit which can be removed for painting/maintenance. Also, parts B21/B22 need not be separated but unless folded down accurately, the holes for the expansion lever rivets may not line up.

We were amused by the description of the ashpan as a high-heeled shoe. Both this and the inside cylinder casting were squeezed into the mould at the last minute and after the instructions had been printed. It can be fitted from above the frames, avoiding the brake gear, but before the motor is in position.

The footplate assembly will be clarified by another diagram and hopefully future kits will solve Allan's cab mystery. As we have already mentioned, our experiment with alternative overlays will not be repeated and the difficulty he experienced in this area is probably a combination of this and slight over-etching.

Whilst we acknowledge Allan's plug for our etched cab handwheels, we thought we had perhaps caused enough singeing of the builder's fingers already! The problem of forming the bends at the top of the tender sides and ends has been removed – these are now pre-formed and anyone purchasing an early kit can return them to us for bending.

In conclusion, as Allan said in his introduction, we hope purchasers of the kit will provide us with feedback, both negative and positive, if only to disprove the supposition that only a small percentage of kits are ever built! More seriously, we hope to continue our journey through the standard LMS tender locomotive designs and to iron out as many faults as possible on the way.

# IMREX '92

**Royal Horticultural Society Halls**
**Westminster, London SW1**

**Saturday, 18th April to Wednesday, 22nd April**

Hard to believe, but this year's IMREX is the 67th annual Easter Show staged by the Model Railway Club.

This year, we are told, the show has a new look with more space between the layouts and trade stands, a separate demonstration area and what is described as a 'family activity area' where visitors will be encouraged to operate layouts supplied by manufacturers. There will also be a rest area.

## LAYOUTS

BEECHWOOD PARK – by Newport Model Railway Society. OO fictional Southern Region branch terminus around 1967 featuring steam, diesel and electric traction.

CHARMOUTH – by D. L. Taylor. 7mm n.g. loosely based on the Marshwood Vale Railway in West Dorset.

DISENTIS-MUSTER – by D. G. Yule. HOm model of Disentis station on the Swiss metre gauge RHB line.

DUNNAN LANE MPD – by D. A. Lane. OO locomotive depot in the period around 1965.

GAUGE 1 ASSOCIATION – As usual, the largest of the layouts on show, featuring live steam as well as electrically-driven models.

HEXWORTH – by R. C. Williams. OO, situated somewhere between Blackburn and Daisyfield Junction in the 1980s.

HORNBY DUBLO – by Mr. & Mrs. R. Hunt. Hornby Dublo models at their best. Last made in 1964, some of the models on show go back to the 1938 origins of the marque.

JURA-SIMPLON – by D. Angell. HO representing the Swiss/French border at Vallorbe on the old Paris to Lausanne main line.

LITTLEBOROUGH – by R. Deas. Modern 'N' gauge layout set in the present day, depicting an intensive service of mainline and inter-connecting branchline trains.

LYNCHMERE – by R. Hayward. 7mm, based on a line never built – a believable 'might-have-been'.

MAIDSTONE ROAD – by Les Darbyshire (see this issue). What might have happened if Colonel Stephens had continued with the Kent and East Sussex line. EM gauge.

MARBURY – by S & K Grantham. OO, depicting BR's Midland Region in the 1960s. Marbury is a small town to the north of the West Midlands.

NEW ANNINGTON – The Model Railway Club's well-known OO modern layout.

NORDEN – by N. J. Dollimore. Scratchbuilt in 'N' gauge, it shows a wide variety of London Transport Tube stock. Norden is fictitious, based on Morden and Ealing Broadway stations on the Underground.

PLEMSWORTH CLC – Merseyside Model Railway Society's P4 model of a small country station on the line between Manchester and Chester around 1929.

SANDOWN – by J. Richards. OO, based on Network SouthEast's station on the Shanklin–Ryde line on the Isle of Wight, including the unusual ex-London Transport Tube stock which is in use there.

SNAILBEACH DISTRICT RAILWAYS – Dave Brewer's 4mm narrow gauge model of Snailbeach District Railway's mineral railway around 1930.

WANBOROUGH CAMP – by Eddie Bourne. P4 on the Surrey/Hampshire border, LSWR practice around 1918.

| | | |
|---|---|---|
| **Admission:** | Adults | £6.00 |
| | Advanced booking | £4.50 |
| | Child/OAP | £3.00 |
| | Advance booking | £2.25 |
| | Family ticket | £15.00 |
| | Advance booking | £12.50 |

**Opening Times:** 10.30 a.m. – 6.00 p.m. Saturday, Sunday and Monday, 18th, 19th and 20th April. 10.30 a.m. – 8.00 p.m. Tuesday, 21st April. 10.30 a.m. – 6.00 p.m. Wednesday, 22nd April.

# MAIDSTONE ROAD

*Incurably infected with the Light Railway bug, LES DARBYSHIRE has spent over 30 years bringing an imaginary corner of Colonel Stephens' quaint empire to miniature life in 4mm/EM. The layout, now in its third incarnation, has long been an exhibition favourite and appears at IMREX with many original features intact – including a 36 year-old locomotive!:*

'Maidstone Road' in its present form is the third variation on a theme that has persisted for well over 30 years. During that time, the model railway hobby has altered almost out of recognition. When I started out on the first 'Maidstone Road', there were few kits on the market; there was no etched brass, no Plastikard, no Superglue; there were very few clubs and only a handful of exhibitions; there was no finescale ready-made track and no P4; there were no feedback controllers or capacitor discharge units. It was very much the era of scratchbuilding, using ready-to-hand commonplace materials like wood and card. Even where kits did exist, they frequently used the same materials — some of you will no doubt remember the CCW wooden sections for coach building, and ERG card parts. How it has all changed! Over this period, 'Maidstone Road' has been developed and rebuilt so that it now contains elements constructed with very different materials, techniques and technologies. I would like to present you with a retrospective look at how the layout developed over the time and, in the words of the examination paper, 'compare and contrast'.

There cannot be many model railways whose conception can be precisely dated, but for 'Maidstone Road' it can be. One day in September 1954, my life was irrevocably changed, as I hope to explain!

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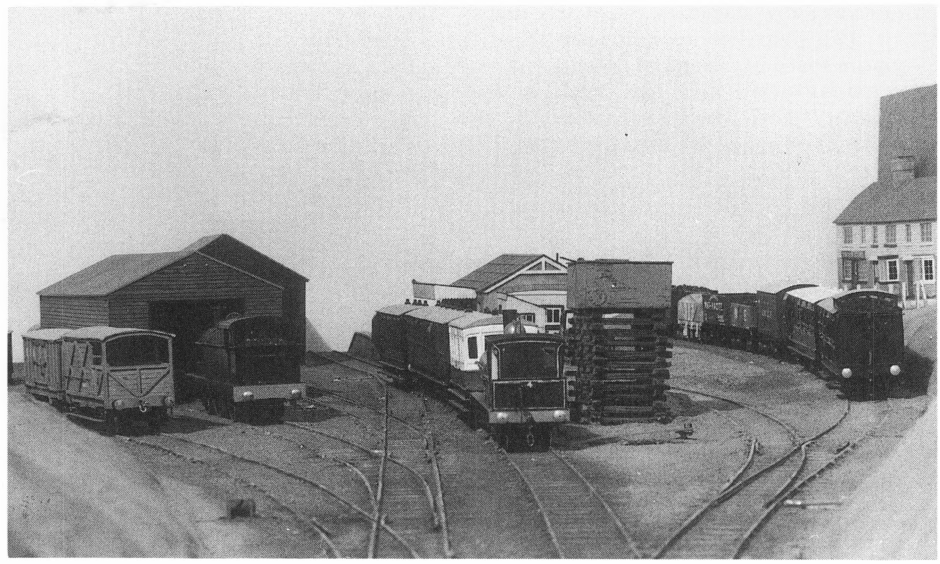

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'fixed' rear axle and two beams for the front and centre wheelsets. This would give four-point suspension which is not ideal. I opted for springing using phosphor bronze wire bearing on the axles.

Bearing in mind the considerable amount of detail included in the tender, I was somewhat surprised to find that there were no works or capacity plates for the tender back. I found some spares from a previous kit (the Model Loco/DJH 'Duchess').

## FINISHING

Photographs of 'Jubilees' are fairly easy to come by, mostly in monochrome but the Colour-Rail range of duplicate slides includes many colour views, as do the series of *Steam In Colour* books published by Jane's.

Painting followed my conventional process (described in these pages before) with one exception. It seems that since Precision Paints were taken over by W & H Models, the excellent Quick-Air-Drying thinner is no longer produced. Certainly there is none to be had at W & H's London shop and requests for it have met with blank looks from the staff. Lighter petrol is a common and perfectly adequate substitute, but the fumes are dangerously flammable – don't risk it. The name, smokebox door and shed plates came from the King's Cross range, still available but these days from Chris Crawley Models of Spilsby, Lincs. The reversing rod and other omitted fittings were added, together with the glazing including the sliding cabside windows. The loco is in an 'oily-rag' and slightly weathered condition.

## CONCLUSION

During the construction of *Southern Rhodesia* I kept a fairly accurate record of the hours involved and the number of components included, the latter not including layers of paint or transfers! It makes interesting reading:

| | |
|---|---|
| Construction/painting hours: | |
| Locomotive | 115 |
| Tender | 55 |
| Total | 170 |
| Components: | |
| Loco chassis (inc wheels, etc) | 185 |
| Loco body | 188 |
| Tender | 194 |
| Total | 567 |

In my introduction I made the apparently contradictory remark that the 'Jubilee' was the most difficult and the easiest kit to build. It was difficult in that there were so many small components to be fitted; in this respect an Exactoscale resistance soldering kit (reviewed by Iain Rice in MRJ No. 51) proved invaluable. However, in the absence of exploded diagrams or sketches it was only by reference to the detailed photos that I found where most of them were supposed to go and most modellers will not have access to such information. I also found the instructions to be a trifle confusing or lacking in some places. On the other hand, all the components (with the exception of the cab sides/front) fitted absolutely perfectly, and there are precious few kits of which that can be said! For that reason I found it an extremely satisfying and enjoyable kit to build.

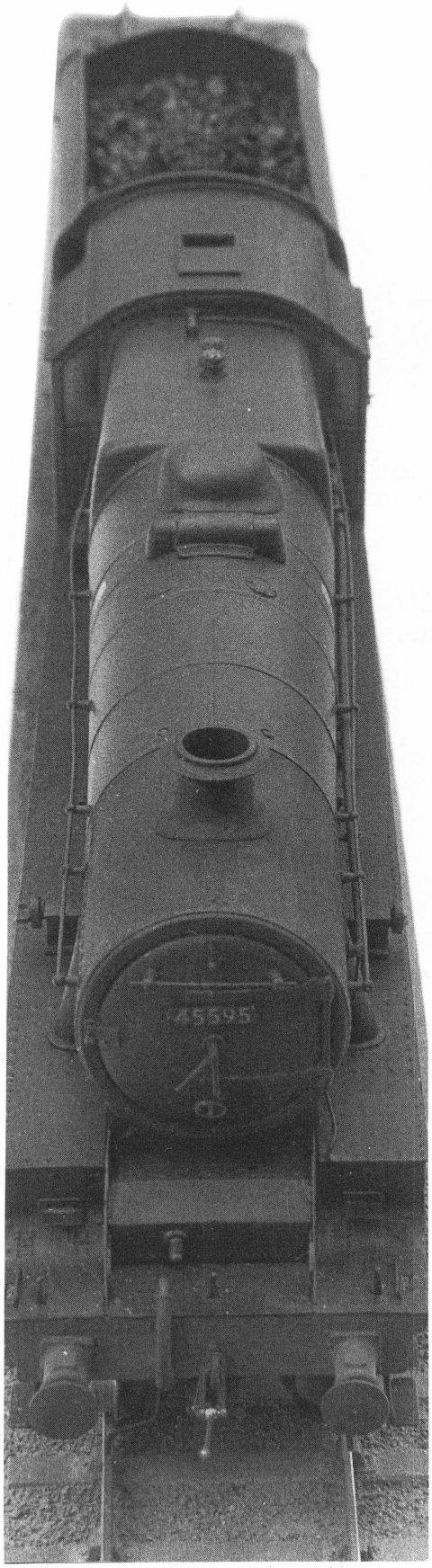
Because of its no-compromise accuracy in terms of clearances, the loco does not take kindly to sharp curves. It will just about negotiate a 4ft radius curve which is equivalent to the prototype's minimum radius of 4.5 chains (gauge widened and DEAD SLOW, according to the BR weight diagram). Like the prototype it is much happier at 6 chains (5ft) and above.

The Brassmasters 'Jubilee' is not for the inexperienced, but for those who are familiar with etched kit construction it has my highest recommendation, and I look forward to building further kits from this manufacturer.

Finally, I sent this review to John Jennison of Brassmasters to give the manufacturer an opportunity of commenting on my findings, and these are as follows:

## MANUFACTURER'S COMMENTS

Allan's review (*writes John Jennison*) was certainly thorough and thought-provoking. We are obviously pleased that his conclusion suggests we came within reach of our objective to produce a kit which utilised state-of-the-art techniques to enable the experienced modeller to produce a model which is as close to the prototype as possible. The length of time




taken to build the kit reflects the amount of detail required to model a complex prototype. We wonder how much longer Allan would have taken if the boiler and firebox had not been cast!

We have been conscious of the recent comments in MRJ about the quality of kit instructions and have tried to provide as much written detail as possible, backed with diagrams to clarify the more complex areas. We have not produced overall exploded diagrams for obvious reasons – 567 components may have made these slightly difficult to draw and even worse to understand. Allan's kit was collected when the instructions were hot off the press and contained one or two typographical errors. The diagrams have since been redrawn and supplemented.

We accept that the tender construction notes can be clarified by separating the notes for the riveted and welded types and this will be done for the next batch of kits.

James Henderson's excellent GA drawings were included as a reference aid and not as scale diagrams. They were enlarged up to the maximum size which would fit onto A3 paper and are approximately 25% above 4mm scale. We recommend the use of photographs to clarify areas of detail such as the tender front and cab interior; there are plenty of these in available published material.

As Allan pointed out, the 'Jubilee' is the first new kit from the current Brassmasters team and we admit to a certain amount of experimentation. We therefore included a choice of scale or robust components for some of the very small details, and push-through or half-etched rivets for other parts such as the cab overlays. Our next kit, the Stanier Black 5, will have fewer alternatives in line with Allan's comments. The problems he experienced with the scale components suggest we have probably reached the limits of existing photo-etching technology, and pushing through scores of rivets on the cabsides is a task most modellers will happily forego. We are considering whether we can improve other aspects of the parts supplied, and the piston rods may be formed from stainless steel wire cast integrally in the lost wax process.

Our main area of disagreement with Allan is the locomotive chassis and the method of suspension/compensation. We designed a sprung chassis based on the simple and robust system found on many Japanese brass locomotives and are slightly disappointed that Allan did not build as intended. Our prototypes certainly worked well 'as supplied', particularly when fully weighted (approximately 12 ounces with a boiler full of lead and more than adequate for normal load haulage). We would point out that the 'scrap plates' are there for rigid chassis fans; for those who favour beam compensation the axle holes in the plates align the frames while they and the beams are drilled for pivots. The plates themselves are simple to remove and reveal a standard 6mm cut-out to accept any of the proprietary hornblock systems.

The order of construction of the locomotive chassis can be varied slightly. The brake hangers should be fitted first but by leaving them loose on the support wires and retained by the brackets, their position can be more easily adjusted while the tie rods and pull rods are being fitted. We assembled all the valve gear and had the chassis running smoothly before removing the cylinder/valve gear assembly and fitting the brakes. Note that the cylinders/valve gear were designed so that they form a unit which can be removed for painting/maintenance. Also, parts B21/B22 need not be separated but unless folded down accurately, the holes for the expansion lever rivets may not line up.

We were amused by the description of the ashpan as a high-heeled shoe. Both this and the inside cylinder casting were squeezed into the mould at the last minute and after the instructions had been printed. It can be fitted from above the frames, avoiding the brake gear, but before the motor is in position.

The footplate assembly will be clarified by another diagram and hopefully future kits will solve Allan's cab mystery. As we have already mentioned, our experiment with alternative overlays will not be repeated and the difficulty he experienced in this area is probably a combination of this and slight over-etching.

Whilst we acknowledge Allan's plug for our etched cab handwheels, we thought we had perhaps caused enough singeing of the builder's fingers already! The problem of forming the bends at the top of the tender sides and ends has been removed – these are now pre-formed and anyone purchasing an early kit can return them to us for bending.

In conclusion, as Allan said in his introduction, we hope purchasers of the kit will provide us with feedback, both negative and positive, if only to disprove the supposition that only a small percentage of kits are ever built! More seriously, we hope to continue our journey through the standard LMS tender locomotive designs and to iron out as many faults as possible on the way.

# IMREX '92

## Royal Horticultural Society Halls
## Westminster, London SW1

### Saturday, 18th April to Wednesday, 22nd April

Hard to believe, but this year's IMREX is the 67th annual Easter Show staged by the Model Railway Club.

This year, we are told, the show has a new look with more space between the layouts and trade stands, a separate demonstration area and what is described as a 'family activity area' where visitors will be encouraged to operate layouts supplied by manufacturers. There will also be a rest area.

### LAYOUTS

BEECHWOOD PARK – by Newport Model Railway Society. OO fictional Southern Region branch terminus around 1967 featuring steam, diesel and electric traction.

CHARMOUTH – by D. L. Taylor. 7mm n.g. loosely based on the Marshwood Vale Railway in West Dorset.

DISENTIS-MUSTER – by D. G. Yule. HOm model of Disentis station on the Swiss metre gauge RHB line.

DUNNAN LANE MPD – by D. A. Lane. OO locomotive depot in the period around 1965.

GAUGE 1 ASSOCIATION – As usual, the largest of the layouts on show, featuring live steam as well as electrically-driven models.

HEXWORTH – by R. C. Williams. OO, situated somewhere between Blackburn and Daisyfield Junction in the 1980s.

HORNBY DUBLO – by Mr. & Mrs. R. Hunt. Hornby Dublo models at their best. Last made in 1964, some of the models on show go back to the 1938 origins of the marque.

JURA-SIMPLON – by D. Angell. HO representing the Swiss/French border at Vallorbe on the old Paris to Lausanne main line.

LITTLEBOROUGH – by R. Deas. Modern 'N' gauge layout set in the present day, depicting an intensive service of mainline and inter-connecting branchline trains.

LYNCHMERE – by R. Hayward. 7mm, based on a line never built – a believable 'might-have-been'.

MAIDSTONE ROAD – by Les Darbyshire (see this issue). What might have happened if Colonel Stephens had continued with the Kent and East Sussex line. EM gauge.

MARBURY – by S & K Grantham. OO, depicting BR's Midland Region in the 1960s. Marbury is a small town to the north of the West Midlands.

NEW ANNINGTON – The Model Railway Club's well-known OO modern layout.

NORDEN – by N. J. Dollimore. Scratchbuilt in 'N' gauge, it shows a wide variety of London Transport Tube stock. Norden is fictitious, based on Morden and Ealing Broadway stations on the Underground.

PLEMSWORTH CLC – Merseyside Model Railway Society's P4 model of a small country station on the line between Manchester and Chester around 1929.

SANDOWN – by J. Richards. OO, based on Network SouthEast's station on the Shanklin–Ryde line on the Isle of Wight, including the unusual ex-London Transport Tube stock which is in use there.

SNAILBEACH DISTRICT RAILWAYS – Dave Brewer's 4mm narrow gauge model of Snailbeach District Railway's mineral railway around 1930.

WANBOROUGH CAMP – by Eddie Bourne. P4 on the Surrey/Hampshire border, LSWR practice around 1918.

| | | |
|---|---|---|
| **Admission:** | Adults | £6.00 |
| | Advanced booking | £4.50 |
| | Child/OAP | £3.00 |
| | Advance booking | £2.25 |
| | Family ticket | £15.00 |
| | Advance booking | £12.50 |

**Opening Times:** 10.30 a.m. – 6.00 p.m. Saturday, Sunday and Monday, 18th, 19th and 20th April. 10.30 a.m. – 8.00 p.m. Tuesday, 21st April. 10.30 a.m. – 6.00 p.m. Wednesday, 22nd April.

# MAIDSTONE ROAD

*Incurably infected with the Light Railway bug, LES DARBYSHIRE has spent over 30 years bringing an imaginary corner of Colonel Stephens' quaint empire to miniature life in 4mm/EM. The layout, now in its third incarnation, has long been an exhibition favourite and appears at IMREX with many original features intact – including a 36 year-old locomotive!:*

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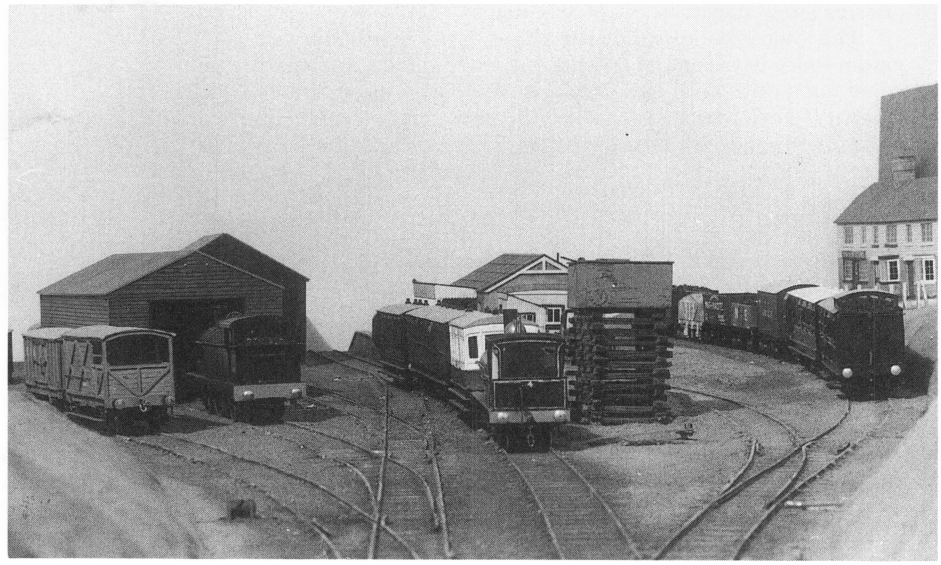

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Having studied the literature, my original intention was to model Rolvenden station as it had more operational interest than High Halden Road and had been well photographed in the thirties (my chosen period), so in the company of a friend an expedition into Kent was mounted and Rolvenden measured up. At that time, fortunately, there was something to measure, but we were only just in time. Some track had been lifted and the loco shed was about to be demolished.

Back at base, the track plan was drawn out and found to take a space of about 13ft × 3ft — not too big, and a bit of width could be saved by omitting a couple of sidings. However, I was not happy with the 'balance' of the resulting layout, the buildings being all at one end of the site. Visually, I wanted something of interest at intervals along the layout, and two thirds of Rolvenden would have been pretty dull to look at. Would Tenterden be any better, I thought. Another measuring safari, and that station was sketched out. It was certainly more appealing visually than Rolvenden, but lacked one feature that I wanted to model — a loco shed. The other stations on the line were too simple for operational interest, and the junctions with the main line (Robertsbridge and Headcorn) far too big, so with some reluctance I settled on a hybrid between Rolvenden and Tenterden. Being a fictitious station it had to have a name, and 'Maidstone Road' was coined — Maidstone, because the real K & ESR intended to go there (and in fact got as far as buying most of the land), and Road because that was the standard Colonel Stephens' suffix for a station miles from its eponymous village!

## MAIDSTONE ROAD I

So began what was (though at the time I didn't know it) the first of three versions of 'Maidstone Road', hereinafter known as MRI. The track plan was based on Rolvenden, with a couple of sidings removed and the buildings moved a little. The station was a terminus fronting on to a road over which the line could subsequently be extended over a level crossing, should the mood take me. At the other end the ground rose so that the line ran into an ever-deepening cutting at the end of which I intended to have a tunnel mouth leading to hidden sidings; I don't think the term 'fiddle-yard' had been invented then. The baseboards (three off) were conventional, with 2in × 1in framing and a 6mm plywood surface. The track was EM gauge, though I did experiment with 18.83mm for a while but abandoned it because it needed tighter tolerances than I thought I could reliably maintain, and there was of course no trade or society support at all. The rail was soldered to nail heads in 1mm plywood sleepers, on a sub-base of Essex board. ('What's that?', you ask. It was a sort of thick grey cardboard about 6mm thick, used in the building trade. Does its still exist?) The station building, based on Tenterden, and the loco and carriage sheds, based on Rolvenden, were constructed of plywood of various thicknesses with some ribbed aluminium sheet for the corrugated iron roofs of the sheds — no Plastikard, remember! Landscaping was effected with various materials including papier-mâché and carpet underlay.

*Maidstone Road II with a much-modified and gradually improved No. 3 – built from an old K's kit – alongside the coal stage. Colonel Stephens fans will recognise the sleeper-built water tower based on the original by the mill siding at Robertsbridge.*

Some stock was built for this line, including K & ESR No. 4, an ex-LSWR Beattie 'saddleback', and assorted coaches. All were scratchbuilt, there being no suitable kits around in those days. The loco had split-frame pick-up, quite a novelty at the time, though it must be confessed that the material used for insulating the split axles broke down after a while and I converted it to wipers; with the materials now available, I suppose I should convert it back again. The coaches were made with 1mm ply sides and solid timber floor and roof sections; panelling was a fret of cartridge paper with the rounded corners punched out with a home-made punch-and-die set (two sets, actually, for the different radii needed). The result was a very strong construction that withstood the occasional drop on the floor rather better than etched brass — and it was *very* much cheaper!

In an unfinished state and as a static exhibit, MRI was exhibited at the MRC Exhibition in 1959. It did in fact work well enough, but I hadn't made the fiddle-yard (there, I've said it!) and anyway couldn't get the week off work to operate it. Unfortunately, due to domestic circumstances, it never was finished; the reason I've dealt with it in some detail is that, in true Colonel Stephens tradition, several of its component parts have been re-cycled (another term not then invented) and used in subsequent versions of the layout.

## MAIDSTONE ROAD II

It must have been about six years later that work began again. I had moved to Bracknell in Berkshire and had joined the local model railway society, and there I found a couple of people with an interest, if not in the K & ESR itself, at least in branch line modelling and in EM gauge. An old baseboard was found, which had previously carried a coarse-scale O-gauge layout; it was 8ft × 2ft and very heavy, but it was there so it was used. A track plan was drawn up which was a sort of inversion of MRI, with the fiddle-yard where the buffer stops were previously and vice-versa. The station now had a second platform and the scenery was a little more urban, at least at the station end of the

*No. 3 and companions on shed. This impressive structure is made from Wills' scenic sheets and is modelled on the Rolvenden prototype. The wind-powered water pump (from the Scalelink kit) is of a type much favoured by the Colonel, who had an aversion to paying piped water rates!*

line. There had been developments in track building techniques since the days of MRI, and although we still employed ply sleepers, we used pressed brass chairs and finescale Bullhead rail from the late and much lamented Model Railway Manufacturing Co. emporium at King's Cross. All were fastened together with the new miracle material of the day, Araldite — no solder at all, except at point blades and crossings. This worked surprisingly well, and we had very few joint breakages in ten years of operation. I might add that once again we did experiment with 18.83mm gauge but found that with several people involved in track making we could not hold the necessary tolerances.

It was not originally intended to be specifically a Kent & East Sussex layout, but since to save time and effort all the buildings from MRI were re-used, it soon became one *de facto*; the use of the old station nameboard clinched the matter, and 'Maidstone Road II' was born. The old buildings were supplemented by a scratchbuilt terrace of houses and shops, and a few other buildings adapted (rather drastically) from Superquick kits. Trees, which were conspicuous by their absence on MRI were on MRII produced from Britain's plastic kits, with some added foliage from tea leaves and the like. Being a club enterprise there was a bit more effort available and the layout was eventually finished and taken on the exhibition circuit, where it performed well and created a lot of interest. However, the 8ft baseboard was an absolute pig to transport and to carry up the narrow, winding staircases with which some exhibition halls were blessed. On occasions, MRII was joined end-to-end with a second layout and worked as a through station, which to me provided much more operational interest. More stock was of course needed, but by now there were more kits coming on to the market and there was less need to scratchbuild everything.

'Maidstone Road II' ran successfully for many years; it's finest hour was perhaps in 1977 when, in celebration of the Silver Jubilee of Queen Elizabeth, my wife Doreen suggested that we decorate the layout appropriately, but for the Silver Jubilee of King George the Fifth in 1935. We hung bunting along the station canopy and the front of the pub, and Union Jacks were at every window; in this state we attended a local exhibition and attracted great interest. Soon after this, the layout was pensioned off — but at least it went out with flags flying!

## MAIDSTONE ROAD III

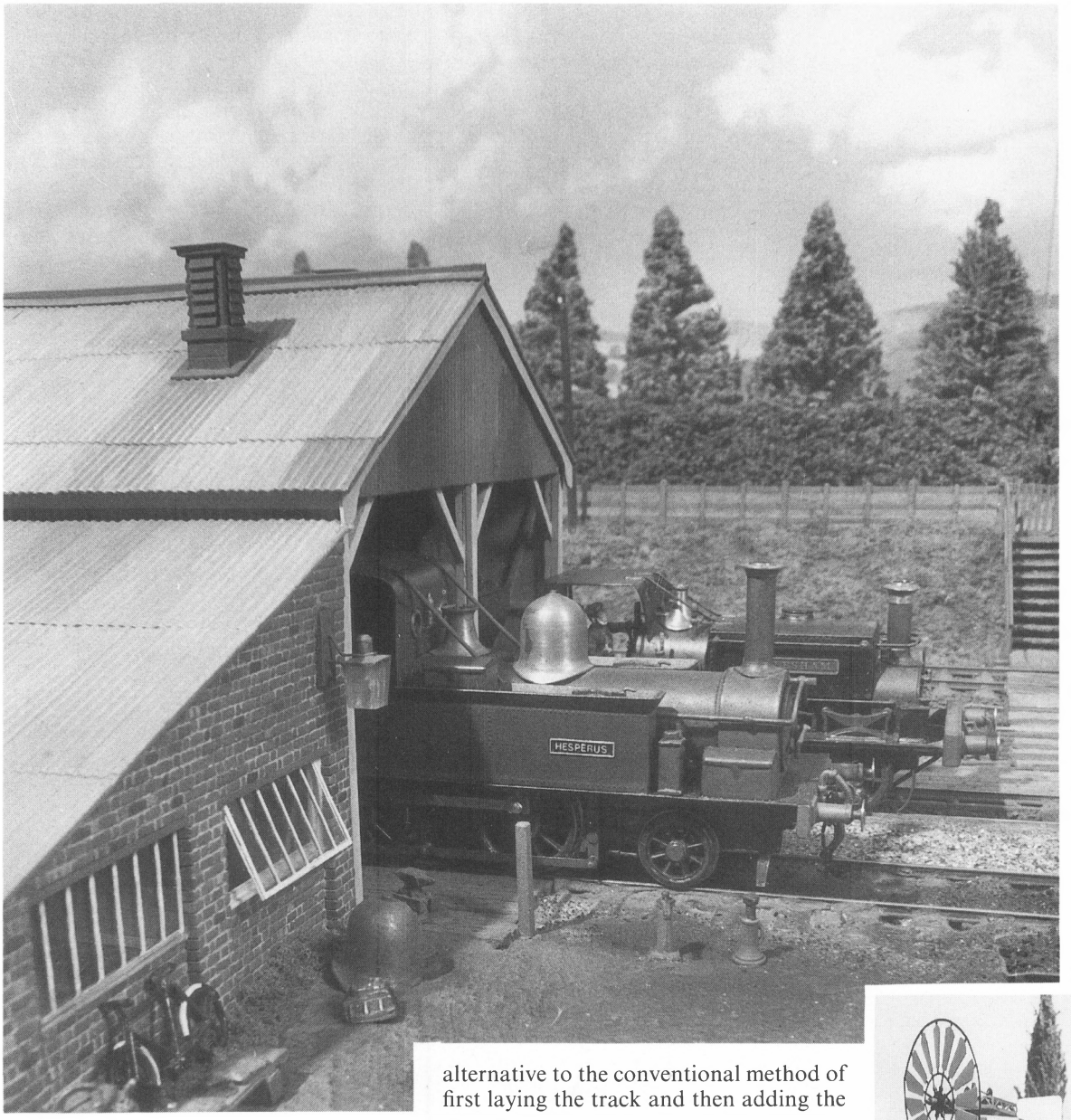
It was at this time that I decided to start on a new 'Maidstone Road' as a solo effort rather than a club enterprise. Once again I toyed with the idea of P4 but again rejected it, this time because I couldn't face the thought of changing all my existing stock — laziness if you like! So it was to be EM once again.

I prepared a list of basic requirements:

1 It must be designed specifically as an exhibition layout, with a defined 'public viewing' side.
2 It must be portable and capable of transport in the family car (at that time a Cortina estate).
3 It must be capable of easy erection and dismantling.
4 It must portray the railway as a part of (but not dominating) the landscape, and be instantly recognisable as Kent — even when no trains were visible.
5 Although based on the K & ESR, it would portray a typical Colonel Stephens line, with stock from any of his companies.
6 It must ultimately be a through station, but be capable of operation as a terminus initially.
7 It must employ as much as possible of the equipment of the previous layout initially, but would be upgraded as time permitted.
8 Good operation, with smooth and slow running, must be paramount.

The dimensions were set largely by transport considerations. I could accommodate boards 4ft 6in in length in the car, together with one fiddle-yard across the end; I would worry about the second fiddle-yard later. Previous boards had been 2ft in width, but, since I wanted to make the railway rather more subservient to the landscape, I added an extra 6in this time — and it is amazing how much of an improvement that small amount made. Three boards were made, with the expectation of a fourth when the station was converted to 'through' later. They were again

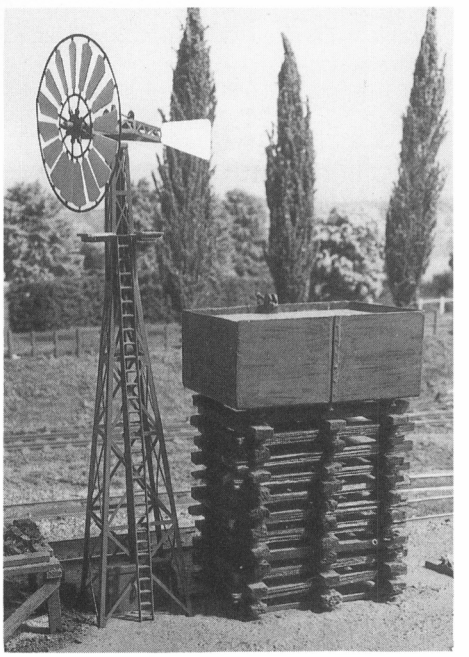
All photos of Maidstone Road III by BARRY NORMAN



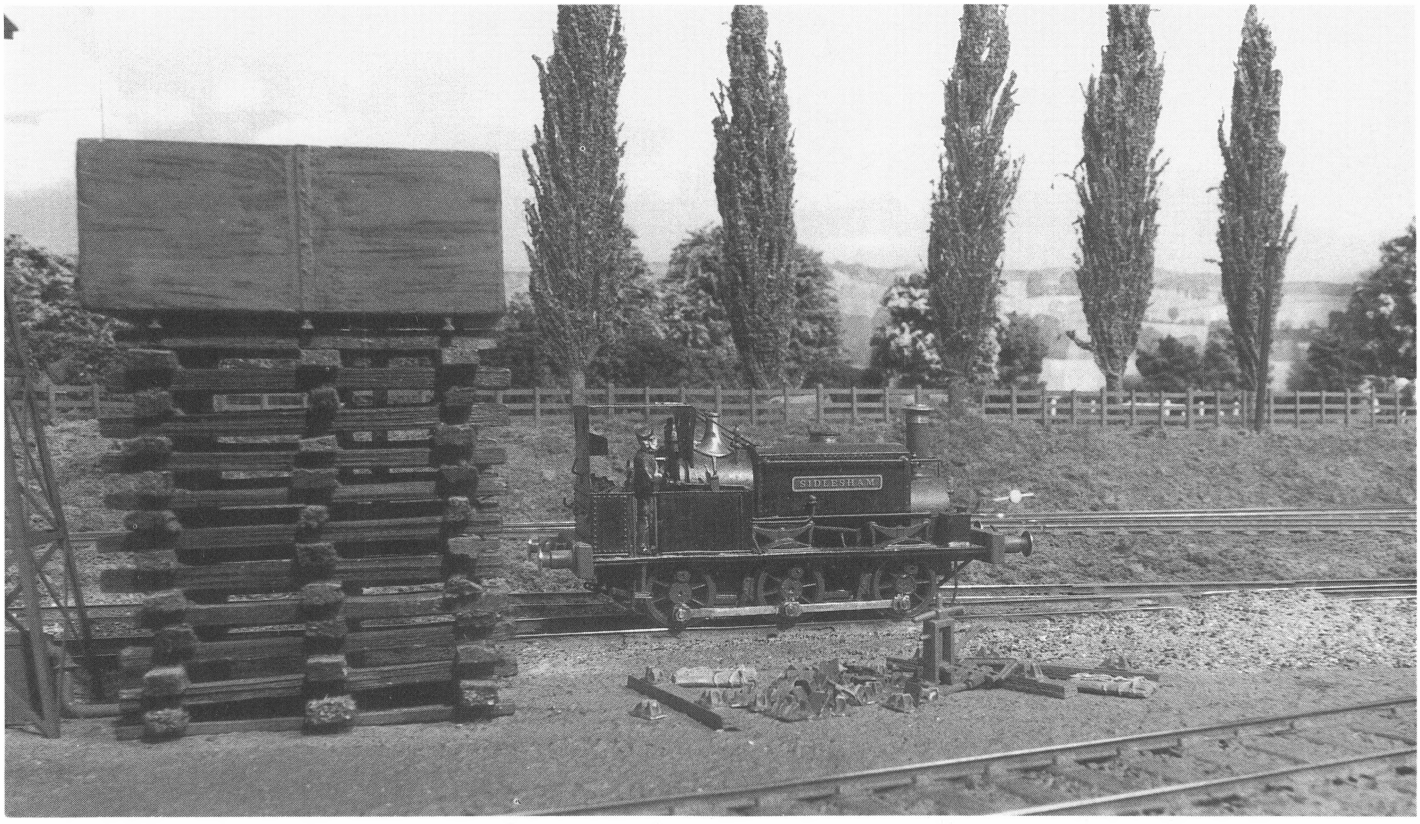

*Sharp Stewart* Hesperus *– ex-Weston Clevedon & Portishead, ex-GWR and ex-Watlington & Princes Risborough – simmering on shed. This was built from the Peter K etched kit.*

conventional in construction, with solid timber framing surfaced in chipboard, the latter only where track was to be laid in order to keep the weight down. The ground contours were built up with softboard and hardboard, and coated with ordinary domestic plaster mixed with dilute Unibond in lieu of plain water; sawdust of various grades of fineness was added to the mix to give texture as necessary. The whole lot was then sprayed overall with a dull brown paint, followed by various ground covering materials — sawdust, tea leaves etc. — which were sprayed shades of green. At this stage, with no track laid, the layout looked exactly as I wanted it to: a landscape with a railway formation cut through it. I can recommend this approach as a more satisfying alternative to the conventional method of first laying the track and then adding the scenery.

Track laying was the next step, and I used Scaleway flexible track for the plain sections, with points built up from the excellent parts then produced by 85A Models. For those who don't remember them, they used copper-clad sleepers machined (as opposed to etched) to leave chair-size pads to which the rail was soldered. The pads controlled the size of the solder blob and raised the rail perhaps 0.5mm above the sleeper, giving a very good impression of a chair. It was an excellent system giving strong, good looking points; what a pity they went off the market. Ballasting followed, with the tracks in the sidings and shed approach covered with a dilute plaster/Unibond mix to hide most of the sleepers and simulate the typical laid-in-mud effect found



*Maidstone Road's watering facilities.*




*The unmistakable Manning Wardle* Sidlesham *was built from the Impetus kit. It is, says Les, "a superb piece of engineering – the nicest kit I've ever made."*

in such places. Finally, all was sprayed with track colour and suitably weathered.

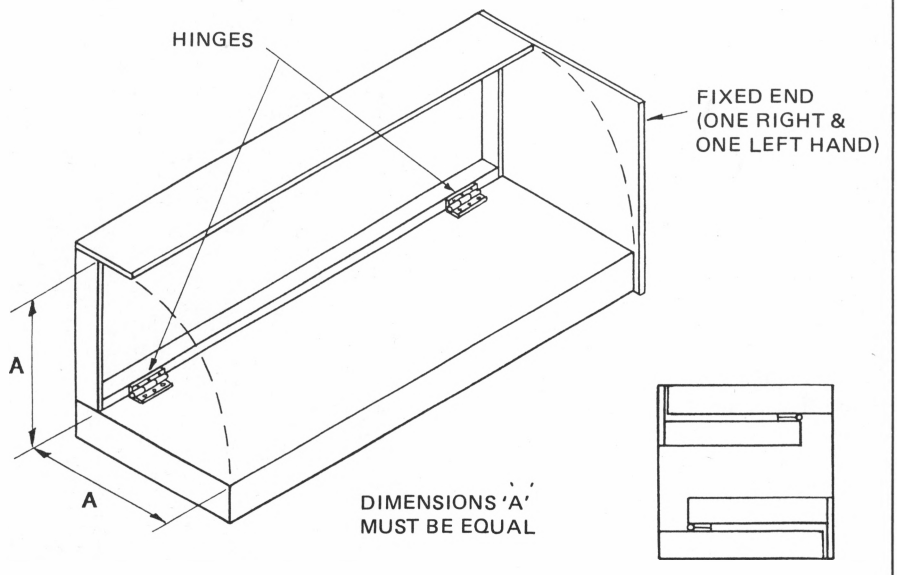
With the track wired up (nothing unusual in that department) and buildings from the old layout installed, we had a working layout, and now began the far more (to me) interesting task of bringing it all to life by adding detail. My philosophy in this area is to aim to achieve a uniform standard of detail across the various elements of the layout — track, locomotives, rolling stock, landscape etc. — rather than achieving absolute perfection in any of them. If you place a superbly-detailed locomotive on an averagely-detailed layout, or have a Pendon-standard building amongst the Superquick, I personally think it diminishes rather than enhances the overall effect. It is admittedly much easier to achieve uniformity on a one-man-band layout than on a team effort. I also like to concentrate the scenic detailing into discreet scenes or cameos positioned at intervals along the layout, so that wherever you stand there is something of interest to see even when nothing is running.

The layout was taken on the exhibition circuit as soon as it was operational, before the scenic side was anywhere near complete, and over the years extra details were added and some (but not all) of the

original buildings rebuilt. I know that some people like to keep their work under wraps until it is fully completed, but it seemed to give the public quite an interest to be able to see construction techniques and to spot what had been changed on the layout since they last saw it — I tried to make sure there was always some change, however small, between exhibitions.

Although my original aim was a through station, and the track plan was designed accordingly, it was ten years before I got round to extending the line. A fourth baseboard was constructed, this time largely using 4mm ply (à la Barry Norman) for the structure with 6mm for the track-bed; why did it take so long for the hobby as a whole to realise that 'conventional' timber-and-chipboard baseboards were grossly over-designed for their purpose? The through station required a second fiddle-yard, which raised a problem — there was no room to carry it! After much thought, I came up with a design which allowed the two fiddle-yards to occupy the same space (and incidentally weigh about the same) as the previous one. I have sketched the arrangement in case anyone else has the same problem to solve.

## TWO FIDDLE YARDS IN THE SPACE OF ONE



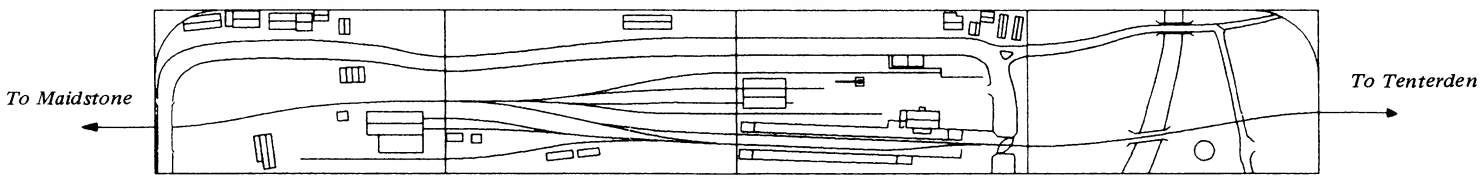
*The layout's grand old dame – ex-LSWR 'saddleback' No. 4, scratchbuilt over 36 years ago and still going strong despite showing signs of great age.*

So, eventually, 'Maidstone Road III' was completed — I won't say 'finished' as there are always things to add and improvements to make. Rather than go into great detail on how everything was made, which would bore you to tears, I would like to comment on a few areas that I think may be of general interest and some where the 30 years plus building timescale provides interesting contrasts.

**Baseboards**: I've already dealt with the construction methods I used, and the improvement effected by the use of ply on the latest board. However, I still don't think I have gone far enough. The board is still over-strength, and therefore overweight. I used two skins of 4mm ply with softwood spacing blocks, to give effectively the equivalent of a solid 4in × 1in timber; I think a single skin, perhaps with some stiffening along the bottom edge, would be more than adequate and half the weight.

*No, not a toilet – it's the corrugated iron ground frame shed, based on the original at Tenterden. The four-wheel coaches in the background are almost as ancient as old No. 4.*

MAIDSTONE ROAD III




SCENIC AREA 18ft x 2.5ft

**Track:** Ready-made flexible track is a real boon, as building plain track from scratch is a bore! I have found dimensional differences between the different makes though — some of my flanges foul the chairs on C & L track but not Scaleway. The loss of the 85A components was, I think, a real blow. I do like the strength of soldered points, but am not keen on the appearance of rail soldered directly to copper-clad sleepers. Is there an enterprising manufacturer out there . . .?

**Back-scene:** I don't really like a layout without some kind of back-scene, even if it is only a sffetrip painted sky blue. I think it helps the eye and the brain to disregard the operators and other extraneous things when viewing the layout. On the other hand, I don't like very high back-scenes either, as I like there to be contact between the operators and the public. Two points about my back-scene: firstly, I radiused the corners at each end of the layout, the radius used being about 12in. This improves the appearance no end and is easy to accomplish; hardboard, dampened first, is pinned and glued to shaped formers of thick (12mm) ply or blockboard. The only problem is that the resulting sections are rather an awkward shape to transport. The second point concerns the scene itself. I am no artist and was concerned that I might not achieve a realistic effect, particularly with respect to perspective. My solution was simple, and I present it in the hope that it might tempt others to take the plunge. I went down into Kent and, choosing a viewpoint with an open, empty field as foreground, took a series of photographs (on slide film) overlapping to form a continuous panorama. The resulting slides were projected onto paper at a suitable scale, the picture outlined lightly in pencil, and then coloured with thin washes of water colour using the slides as a guide. Only a suggestion of detail is required — put the colour on in broad masses and don't try to

*Maidstone Road station with* Sidlesham *approaching the level crossing. The bus in the yard is a Dennis Ace, built from an MS Models kit.*

*The station building is a truncated version (one bay short) of Tenterden.*

paint individual leaves. The result: a strip of scenery with correct perspective. Try it — it's surprisingly easy!

**Locomotives:** This is one area where the long construction period really shows. The early locos had rigid axle bearings, whereas later ones have some compensation or springing. I believe some flexibility is beneficial, but am not convinced of the need for full compensation on locos of the size found at 'Maidstone Road', at least not in EM gauge; P4 may be another matter. The earliest loco (the 'saddleback') has acquired a degree of flexibility over the years by means of wear in the bearings, which are now decidedly oval, but the coupling rods are rigid so the movement must be limited. However, this is enough to give very reliable running. My 2–4–0T has a rigid coupled wheelbase with a sprung pony truck and this, again, seems to be enough. The latest locos ('Terriers') have the driven axle (the trailing one) fixed and the other two sprung in such a way that the loco weight keeps the leading axle bearings hard up against the top of

*'Terrier'* Rolvenden – *an interesting model using a modified Dapol body on a scratchbuilt chassis. The gold 'K & SR' lettering on the tanks was achieved using Woodhead Models' white-shaded-black lettering decals touched up with gold paint.*

*Mixed train rumbling over the river bridge at the 'country' end of the layout. The bridge was built from original Colonel Stephens' drawings.*

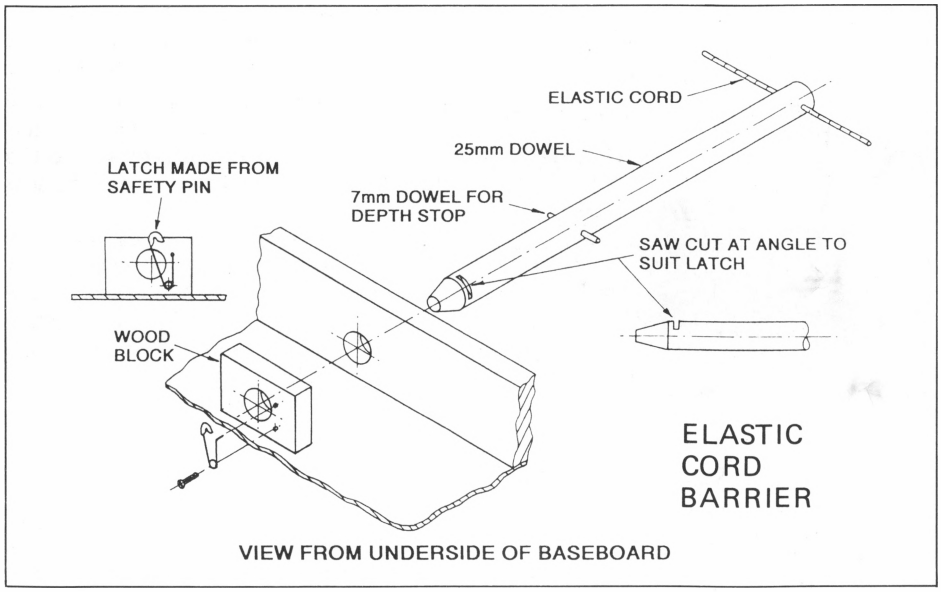
*This, believe it or not, is a 'commodious camping hut' of which several appeared on Stephens' lines to be rented out at around seven-bob a week.*

their guides, and the centre axle has a little movement both above and below the nominal position. These are the most reliable of all, but whether this is due to the springing or not I am not sure. It may equally be due to the pick-up method, or merely to the fact that they are the least worn!

The 'saddleback' has an American Pittman motor which at the time was the last word in design — and very expensive. It consumes about 600mA, far more than modern motors, but is powerful and highly reliable. Subsequent locos are all fitted with open frame motors of Japanese origin, mostly DS10s, except for one larger loco having the luxury of a Portescap, while the tiny Manning Wardle has a Tenshodo of the type used in their 'spud' motor bogies. All perform equally well, so I can't really justify a Portescap when you can get several DS10s for the same price.

The two 'Terriers' have split-frame pick-up, using insulated axles originally from Gibson (now from C & L). Materials have improved since my early experiments so I don't expect life problems this time. The only real difficulty with this method of pick-up is that you have to de-insulate the wheels, and that is a little tricky. I used 5 amp fuse wire, soldered to the rim (very quickly using a really hot iron) and passed through the axle hole before forcing the wheel on the axle. The secret is to lightly radius the axle end and the hole, and to file a small groove in the hole, of depth about half the diameter of the wire. The wire then should not break, but in case an occasional one does I advise fitting two wires 180 degrees apart. I am so pleased with the results that I doubt if I will use wipers again unless the chassis design (of a kit) prevents it being split.

**Rolling stock:** To begin with, all was scratchbuilt but most recent items are from kits or adapted from proprietary stock. The original wood and card stock stands up surprisingly well in comparison with later efforts, though in the case of the coaches it is let down by the hand lettering which really needs replacing with transfers. With the freight stock, on the other hand, I think the old hand-lettering looks better than transfers which are somehow too perfect; after all, the prototype was signwritten by hand, and not always very well either! If a kit has provision for compensation, I take advantage of it but otherwise don't bother except with long-wheelbase vehicles. As with locos, I don't think it is essential in EM.




**Buildings:** The original plywood buildings have been gradually replaced by ones built from the excellent Wills moulded plastic materials. These are easy to use and very effective, but need a lot of care in painting to avoid a plastic look on the finished product. To disguise the thickness of the sheets, I always bevel the edges of roofs etc., and nick the underside of the edge with a triangular file at every tile joint (every corrugation for corrugated iron). The station building and one row of cottages are still the originals of thirty years ago, and despite their brick paper covering and rather crude construction they do not look out of place. In fact, age has weathered them so that they blend into their surroundings quite effectively.

**Trees:** We are always being asked at exhibitions to explain how the trees were made. I wish I knew! The truth is, they were all bought and were made by an outfit called Scape which I believe no longer exists. Fortunately, we managed to obtain sufficient for the layout before they disappeared from the market. I don't know what they are made of; they are on a wire frame but the 'foliage' is quite unlike other commercial efforts, looking fairly delicate but actually being hard and virtually indestructible. Like the 85A point kits, they are sadly missed.

**Control:** Item 8 on my original specification, and most important. We get pretty good running on 'Maidstone Road', and this is due maybe 25% to good housekeeping (cleanliness, lubrication, adjustment of gears and pick-ups etc.) but 75% to the controller. This is a Digitol Gemini, one of the first feedback controllers on the market, and it gives superb control with smooth slow running. It has separate throttle and brake controls, and we usually drive with the brakes partially on all the time, controlling with the throttle. We've tried other controllers but haven't yet found anything approaching the Digitol's performance.

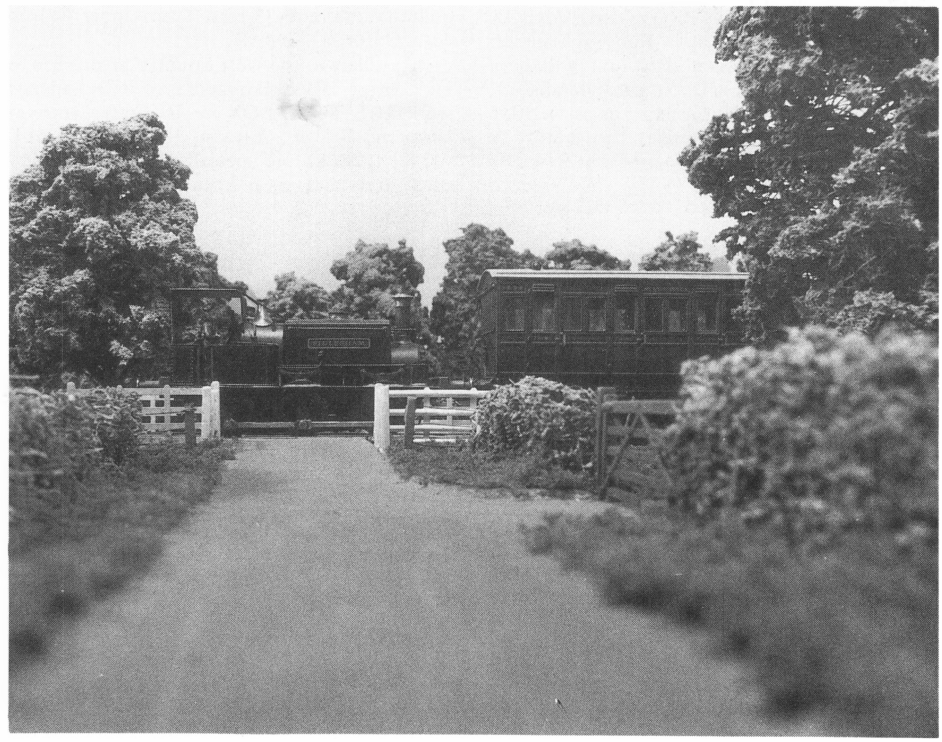
**Lighting:** Exhibition hall lighting varies so much that built-in lighting is a must. I much prefer tungsten light to fluorescent, and have installed ten 60-watt spotlights spaced along the length of the layout and roughly in line with the front (i.e. the public side) so that they are slightly inclined towards the operators. I have seen layouts with spotlights at the back, shining directly into the eyes of the public and putting everything on the layout into deep shadow — not good, unless you have something to hide! A couple of my spotlights are in yellow shades which gives a rather pleasant suggestion of warm sunshine.

**Barriers:** Following trouble at one exhibition we decided to install our own barrier, and this has proved very effective. A length of elastic cord is stretched along the layout, spaced about 9in away, passing through lengths of 1in wooden dowel at intervals. The dowels are held in place by simple spring catches made from large safety pins. They push straight in and lock, but are easily unlocked by twisting them a quarter turn; I hope the diagram makes the arrangement clear. The kids love to twang the cord but seem to leave the layout alone!

## CONCLUSIONS

Have things improved in the past 30-odd years? The answer must be 'Yes'. It is much easier to produce an acceptable fine-scale layout now than it was then, as witness the number of excellent layouts on the exhibition circuit. The new materials and technologies contribute greatly to this, as does the vastly increased trade back-up, particularly from the small, specialist manufacturers. I never expected to be able to buy an off-the-shelf 'Terrier'

*Continued on page 120*



Sidlesham *taking a passenger train over the ungated crossing at the country end.*

# SMALL SUPPLIERS FORUM

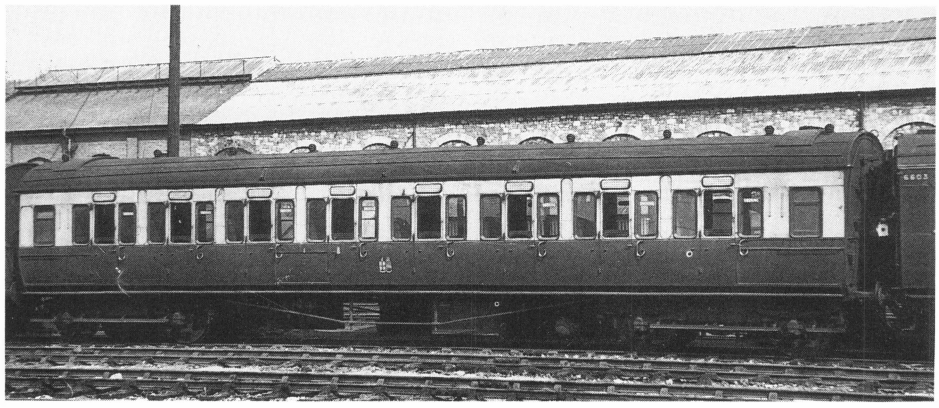


*Diagram C31, one of the Great Western Toplights to be produced in 4mm scale by Slater's.*

**TRADE GRAPEVINE**

"If only someone would produce some high quality plastic kits for 4mm scale GW bogie coaches." That's one of those pleas we've heard over and over from readers, so the latest SLATER'S price list will cause some excitement with the announcement of four Great Western Toplights to Diagrams C31, D45, E88 and F15. We understand they should appear by the end of the year, so if they are up to Slater's usual standard, GW modellers should at last have something special which can be built quickly and painlessly in quantity. Can we hope that another producer of quality kits, like Ratio, will re-enter the fray and offer equivalent stock for other companies?

New from DAPOL is a 4mm scale plastic kit of a country bus station, the standard rectangular building with stepped front gable and folding doors once a familiar sight in small rural towns. Although designed as a 'self-coloured' kit for use with EFE diecast buses, it is perfectly capable of being zipped up into something accurate and individual. The cost is £9.95, and there are plans for a bigger version, complete with office block, oil tanks, etc, later in the year. Widely available through the retail model trade.

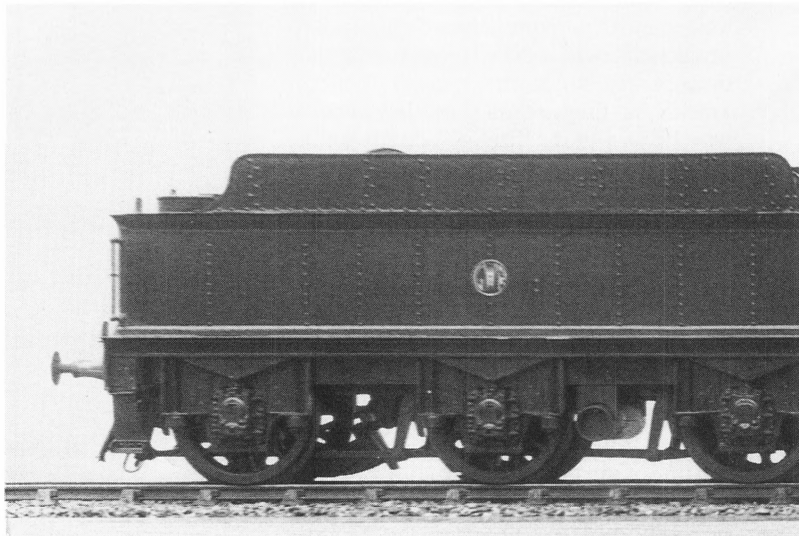
While we're on the subject of road transport, watch out for the new range of ready-built whitemetal models by PROMOD-GEARBOX – cars in 7mm (from Austin Ruby to Triumph Stag) and buses in 4mm (first out will be a Leyland National Mark I). No price details yet, but we will pass them on as soon as we have them. Meanwhile, exclusive distributor is Promod, Vivian Road, Stoke-on-Trent ST4 3JG (0782 44532).

MARTIN'S MODEL ACCESSORIES – that's Martin Brent, of course – is selling a most interesting 'canvas look' material for use on coach and van roofs and other places where it might be appropriate. Designed for model aircraft use, it is black and designed to adhere through heat – so iron the roofs of your plastic kits at your own risk! It is fine-grained and should work all right on metal and wood models; look out for it at exhibitions, where Martin sells his phosphoric acid flux solutions and scenic materials. It costs £1.25 a roll from his stand or direct from 11 Manor House Gardens, Abbotts Langley, Herts WD5 0DH.

Another source of 1mm OD tube, this time in nickel silver: K. R. WHISTON LTD of New Mills, Stockport SK14 4PT (telephone 0663 742028). Their latest catalogue lists 'capillary tube' 1mm OD x 0.5mm ID x 165mm long as a regular stock item. Our thanks to Michael Larcombe of Chippenham for the information. NICK DE COURTAIS also has a supply of 0.91mm O/D nickel silver tube, 26 SWG bore @ 60p per 6½in length, plus 50p P & P any quantity. Write to 33 First Turn, Upper Wolvercote, Oxford OX2 8AH.

Travellers to the West Country might care to look in at David Fouracre's recently opened store THE TOOL BOX in the Craft Centre at Umborne Bridge, Colyton, Devon EX13 6LU (0297 552868). He specialises in good quality used tools and, as a keen 7mm modeller, is

*Anyone who has bought high quality whitemetal figures for 7mm scale will know that it can be an expensive business and will doubtless welcome these imported plastic ones from The Signal Box. At £4.02 for a set of 12 (seated passengers, standing passengers and people at work are so far available), they are well-proportioned and easy to improve; the two shown are straight from the packet, proving that the removal of flash and bases will produce a respectable basis for painting. Some of the figures are in unlikely 'frozen action' poses, whilst others (like the bobble-capped matelot) give away their Gallic origins, but most of the rest are usable; the seated passengers are especially good. Available from The Signal Box, FREEPOST, Coalville, Leicestershire LE6 2RZ.*



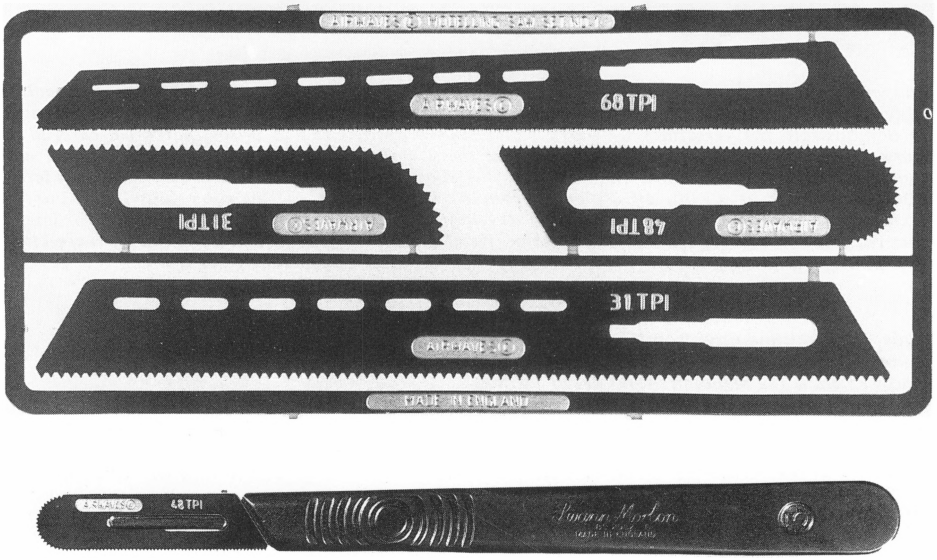
*This is the first completed model of Malcolm Mitchell's new 7mm GWR 'Grange' we've seen. The photograph amply explains why we were impressed. Carl Legg, the man who built the kit, was even more impressed, believing that the sheer quality of the kit not only raised his sights but improved his performance as a modeller. "When you start to tackle a kit like this, you automatically want to give it your best. When it continues to go together without problems or headaches, exactly according to the instructions, the desire to maintain one's highest standards never gets the chance to flag. The kit lived up to the designer's reputation", he said. Carl built the kit as supplied and chose, for cost reasons, a set of turned Wednesbury wheels, although he now wishes he had splashed out on the considerably more expensive AGH wheels, which would better match the finesse and beauty of the rest of the model. We are hoping to persuade Carl to talk more about the building of this model, which costs £199.95 (less wheels and motor) plus £70 for the tender (three types available) from Malcolm Mitchell Design, Marsh House, Howard Lane, Stratton, Bude, North Cornwall EX23 9TE.*

well tuned-in to the needs of the fraternity. Besides, he's offering a sympathetic haven from the rigours of beach games and sandcastles!

NER stalwart MIKE GROCOCK has produced a sheet of 'pressfix' transfers for 4mm 20-ton hopper wagons (Diag P7) and 23-ton loco coal wagons (Q3) bearing the legend 'North Eastern Railway' as it appeared between 1904 and 1910 – a curious but distinctive (and rather attractive) blend of extended and condensed lettering, complete with full stop! The sheet, sufficient for five vehicles, costs £1.75 (plus SAE) from M. R. Grocock, 70 Well Meadow, Bridgnorth, Shropshire WV15 6DE. Alternatively, the sheet will be available at exhibitions from Steve Barnfield and 51L Models.

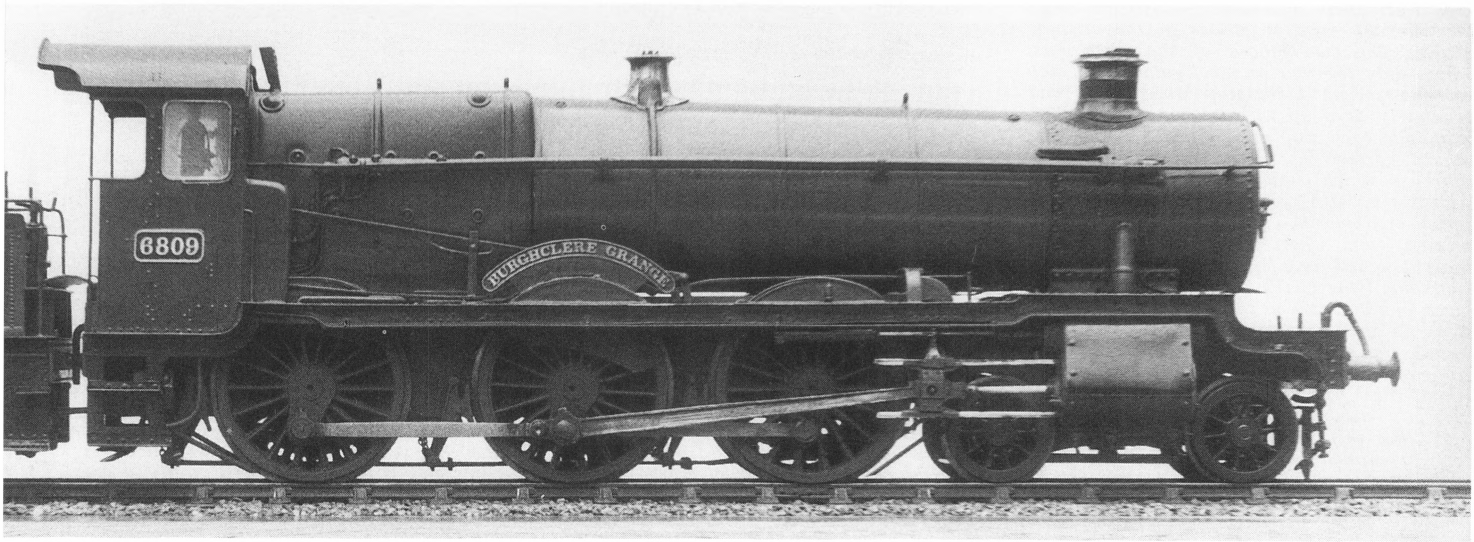
Those who were interested in Andrew Lambert's method of assembling tough, reliable crossing-vees and wing rail units may be interested to learn that C & L FINESCALE produces an alternative to the metal strip used by Andrew. It's double-sided copperclad strip of the correct width and thickness for both 4mm and 7mm scales (.55mm thick/.102in wide and 1mm thick/.180in wide respectively). Available in bundles of 10 strips, each 4in long, it costs £1.75 for 4mm, £2.15 for 7mm. For address, see advertisement in this issue.

Andy Mullins of BRANCHLINES does enjoy a little thrash around in the undergrowth and, true to form, has come up with an unusual item for a 7mm narrow gauge kit – a Model T Ford-powered railcar, based on that used by Ireland's Tralee & Dingle Railway but typical of many minor railway types. Designed for 0-16.5 scale/gauge, the etched brass kit is scheduled for April and will be complete with Mashima motor, gears, wheels and simple compensated chassis. Cost: £49.35. On the subject of motors and gears, Andy has produced an extended motors and gears data sheet covering motor characteristics, transmission situations, sizes, power/rev ratios and other such stuff – price 10p plus an SAE from Branchlines, PO Box 31, Exeter, EX4 6NY (0392 437755).

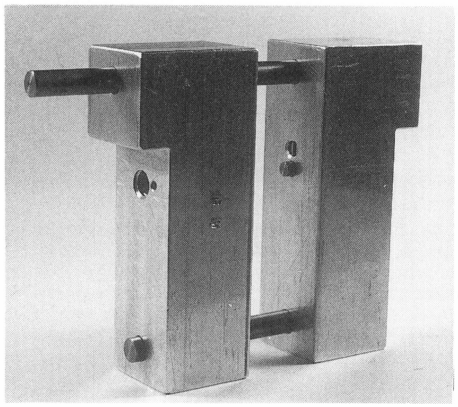



*These are just about the finest modelling saws we've ever seen – a mere 10-thou thick and designed to fit on an ordinary No. 3 scalpel handle. Etched in stainless steel, they range from a relatively coarse 31 teeth per inch to a barely visible 68 TPI and come in a variety of lengths and configurations. The etch shown here contains the four 'large' blades, whilst a second carries six smaller types. They're ideal for resin and plastic, enabling even the smallest surface detail to be shaved off intact, and have 1,001 other modelling uses. Cost: £5.50 per fret post free (stipulate Fret 1 or 2) from Impetus Models at P.O. Box 1472, Coggeshall, Colchester, Essex CO6 1UQ. Suitable handles are also available at £3.50 post free.*

*The Fox range of 'Rail Heritage' waterslide decals, formerly known as FMR Transfers, bounds from strength to strength. No sooner have they changed title than 18 new packs in three scales are issued (shown here is the 7mm sheet of BR's 'cycling lion' totems). Strangely for an outfit which made its name with modern outline transfers, Mike Watts and his team at Cranberry End Studios are working backwards, arriving for the time being in the steam-diesel transition era; packs covering the BR steam totems ('rampant ferret with dartboard' as well as 'cycling lion'), steam cabside numbers in both cream and white, and early diesel/electric running numbers and prefixes in white are available for 2mm, 4mm and 7mm scales, ranging from £2.45 to £5 per pack. We've tried these decals in several applications and they are genuinely excellent products – and, says Fox, there are more to come during 1992. Catalogue is £1 from Fox Transfers, Cranberry End Studios, 150 Upper New Walk, Leicester LE1 7QA (0533 543945).*

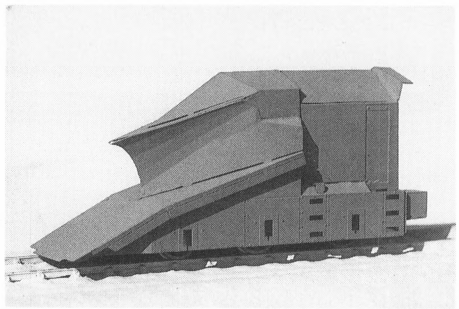


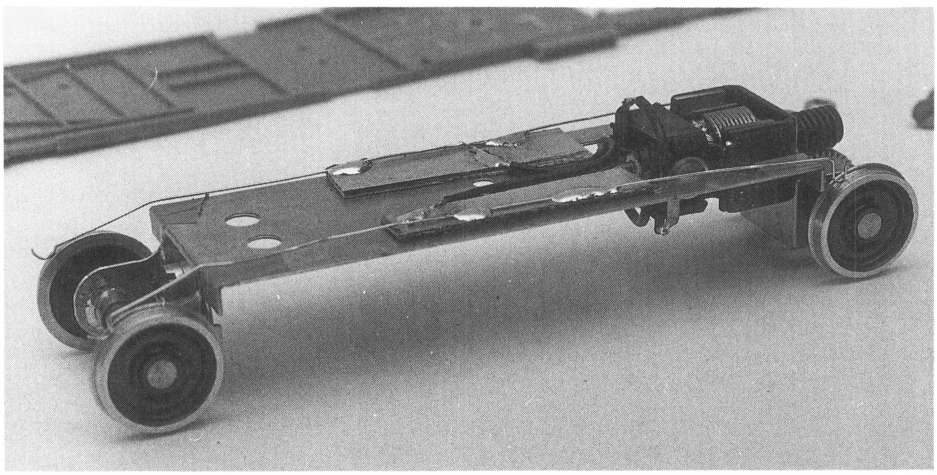
*Shown here is a parade of shops made up from Howard Scenics 4mm kits, straight from the pack, which enables almost limitless variations. Peter Howard constructed the model and sent it to us to demonstrate the versatility of Gerry Hall's superb designs and to prove that when carefully chosen subjects are combined with Gerry's artistry a good result is inevitable. The model as shown consists of three house kits at £4.99, one shop front kit at £2.00, and one (2mm) traders fascia sign sheet at £1.00, all available from Howard Scenics, 3 Millbrook Close, Blewbury, Oxfordshire, OX11 9QL. More interesting developments from this source are promised for later this year and will be reported in this column. We at MRJ have been assembling some of these kits and whilst they are not exactly easy, they undoubtedly set a new standard in card kits.*



*Quartering jigs have come and gone over the years. All sought to help locomotive kit and scratchbuilders achieve that most basic of requirements for a running chassis – coupled wheels that actually go all the way round! Whilst there are plenty of experienced hands to insist that it's easiest done by eye, squinting through the spokes, the loco-building 'clinics' at exhibitions still get a steady stream of aspirants with part-built chassis that won't go anywhere for want of accurate quartering. Clearly, some of history's jigs didn't quite make it either. This one, however, from GW Models, looks a lot more promising. As we've come to expect from George Watts (the 'GW' of 'GW'), it is a genuinely precision tool designed to go between the jaws of a vice in the attitude shown. The two blocks of the wheelpress, which slide together on steel guide rods, each carry a sprung 1/8in stop which faces and accurately lines up with its opposite number. Alongside each stop is an adjustable stud (one at the correct 90 degree opposition to the other) in which is machined a slot exactly the width of a 14BA crankpin; being a slot, it can accept crankpins in a variety of throws. So, you press a 4mm wheel (obviously, in this case, those designed for 1/8in axles) onto each stud, crankpins lying in the adjacent slots; you then place an axle between the wheels and close the vice. As the vice closes the axles onto the wheels, the sprung studs retract into the block, stopping flush with the faces of the blocks. When that happens, you should have one perfectly accurate quartered axle. We'll be evaluating this tool fully in due course, but early experiments on the workbench show that it does perform as promised. It costs £17.50 plus 50p post from GW Models at 2 Talltrees, Penstone Park, Lancing, West Sussex BN15 9AG.*

*Due out any time now from Hurst Models is a 4mm etched kit of the ZZV snowplough; shown here is the test etch minus detail castings and solder fillets. The final complete version will cost £16 approximately. Also on the stocks from HM are cast brass non-working BSI couplings (as fitted to DMUs from 141 to 159), costing around £1.95 per pair, and a Brecknell-Willis high-speed pantograph – no details of that yet. Hurst Models are at 18 Milton Way, South Bretton, Peterborough PE3 8YP (0733 332531).*





*It's been out for a while and it has certainly been seen in print before, but this kit – a motorising unit for the famous Dapol (previously Airfix) 4mm railbus – has become one of the hobby's rare blockbusters. Designed and produced by Branchlines, it has been selling like hot cakes. Comprising a fold-up-and-solder etch with integral motor and gear mount, it comes complete with everything – including wheels and instructions – to turn the Dapol plastic kit from a dummy to a mover. Andy Mullins of Branchlines can't explain why it has sold so well, but our theory is that it satisfies a number of achievement ideals; it's easy enough for the humblest beginner, yet requires just enough work to make anyone feel that they've actually done a 'real' modelling job; it's quick, turning from a bag of bits to a running chassis in about an hour; lastly, it goes with a cheap, readily-available and well-known kit. The Branchlines kit costs £28.50 for EM and P4 (£1 less for OO) and there's now a companion etched interior floor, seats, controls, etc. for £8.50. Postage is 75p. Address: PO Box 31, Exeter EX4 6NY.*

# TIPS ON RESIN CASTING

**RICHARD DE CAMIN stumbled into home resin casting to satisfy a temporary club requirement for batch components. Now he's working on a complete 7mm resin-cast coach — and even selling his own product line far and wide. Although there are no fortunes to be made, the medium offers much to modellers, especially if they avoid the pitfalls:**

In the beginning, my clubmate Peter said: 'We need retaining walls for the O gauge layout and I want you to make the master'. This instruction, coupled with re-reading three articles in the late *Constructor*, led me into a fascinating world of opportunity.

To start learning techniques on a large item such as an O gauge retaining wall could have led to expensive disaster, so I looked around for something smaller and simpler to cut my teeth on. I settled on replacement van ends for the Peco 7mm GWR van, an idea copied from the Coopercraft 4mm kits range. I made an oversize master to allow for resin shrinkage, as advised in the aforementioned articles. The finished master was duly taken to a London shop where knowledgeable assistants sold me polyester resin, rubber and hard casting plaster. I need not go into the weeks of despair that followed. Suffice to say that although my early van end masters were not very good the biggest problem was the overpowering smell of the resin — it permeated the whole house and lingered for days! this was due, of course, to the fact that polyesters give off styrene fumes.

Meanwhile, having learnt a bit about mixing and pouring rubber, the retaining wall master was completed and Pete is still happily churning out cast plaster 'brickwork' retaining walls. The whole saga could have easily ended there but for the chance viewing of my inadequate resin efforts by Mark Fielder who suggested that I try 'Fastcast' from Strand Glass. Eureka! Resin with practically no smell — thanks to it being a urethane — and suitable for a domestic environment (provided normal safety measures are taken — i.e. do not smoke, work in a ventilated room and avoid skin contact, as well as keeping the constituents away from food and food preparation areas; wear a mask if sanding down large areas). Another great advantage then manifested itself: 'Fastcast' hardly shrinks (approx 0.5%), so oversize masters are not really required. The obvious next step was to improve my castings by chopping up the Peco ends, and using much modified proprietary parts as masters (please note that I *did* ask Peco's permission). To combat the minimal shrinkage, I thickened the top and sides with a thin piece of Plastikard.

For scratchbuilding, resin is a great timesaver; instead of making four bogie sides you make one, and cast four, with the added advantage that you can go on to make as many as you want in the future. There is an obvious temptation to copy other people's work. This is downright piracy and unlikely to make economic sense when you consider the cost of the resin, rubber and your time, although I doubt there is much that the victims can do unless you try to sell your castings; anyone daft enough to do that deserves the full weight of the law down on them.

'Fastcast' is a two-part liquid urethane resin of the type now used by many kit manufacturers. It costs slightly more than comparable polyester resins, but gives the same crisp results with none of the strong odour penalties. It does, however, have to be used in conjunction with a release agent — otherwise you will never part the resin from your moulds — and is susceptible to moisture, so all storage vessels must be properly sealed, and tools, mixing containers, moulds etc kept thoroughly dry.

The smallest quantity available is 1kg, which is the only sensible size for modellers.

*The two-part 'Fastcast' resin kit, which comes complete with catalyst. 1kg pack costs about £12.00.*

After opening, the shelf life is about 3–6 months, although moisture — even atmospheric moisture — will shorten this considerably. Part A comes in a big ring-pull can with supplementary plastic lid for resealing; this is pretty useless so I recommend that the resin be decanted and stored in small, dry glass jars with screw-down lids. I use honey jars because they are shallower than jam jars, but I should not recommend them because Part A looks like honey. I therefore remove all original labelling and keep it well out of the way of the children. Part B is a brown liquid sold in small oil-cans with screw lids, for which I know no better form of storage. At the time of writing the Part A packaging is being reconsidered.

The two parts have to be mixed in equal quantities according to the simple instructions. For Part A I use a hypodermic syringe to suck the exact volume from the jar and squirt it into a black plastic 35mm film cannister. This plastic is immune to the resin and periodically, the hardened residues of many mixings can be removed. For Part B, I use a clear plastic 35mm film cannister (Fuji) with felt-tipped graduations marked on the side, into which the liquid is poured and measured. When ready it is poured into the black mixing cannister containing Part A and stirred with an old felt-tip pen; wood mixing sticks have to be avoided because the resin will draw out any moisture present and, as you can imagine, all the tools required are of a throw-away nature. I also use protective gloves, surgeon's type, which, provided they are occasionally re-talced, can be used over and over again. So if you are a keen photographer and in the medical profession, you have no problems! Lesser mortals like me have to beg, borrow and steal. I was innundated with clear film cannisters a few days after I let it be known that I needed a couple! By the way, I don't need any black cannisters either, thank you!

## MAKING THE MOULD

Before you can cast your own resin components, you need a mould. And to make a mould, you need a casting master, like the van end referred to above. Masters can be made of polystyrene, brass or other metals, proprietary clays like Das (air drying) or Fimo (bake drying), or even sealed cardboard. Whatever you use, the master should ideally be fractionally oversize in the critical dimensions by the shrinkage percentage (0.5% approx).

In this article, we are only dealing with 'single mould' castings — that is, castings which can be made complete by pouring resin into a single mould cavity, as opposed to the slightly more complex process of producing

*Strand 'Mastermould' 1.1kg pack of cold-cure silicone rubber compound for making moulds (which can be used to cast plaster, wax and low-temperature alloys as well as resin). Pack this size costs around £25.*

items with all-round detail (like model figures) requiring two-part moulds. With single-mould castings, one obviously has to remember that the top surface of the poured resin is going to be flat and undetailed; this will normally be selected to be the unseen back or bottom of the finished article, as in the case of such things as van ends or retaining walls.

The rubber I now use and recommend is 'Mastermould', a cold-curing silicone rubber compound also by Strand Glass. Several types are available, giving excellent reproduction of fine detail and a life of 20–50 casting 'shots' before tearing and disintegration means they have to be thrown away (because unlike hot-melt rubbers, they cannot be restored to usable liquid form). The rubber comes complete with a catalyst which causes it to set and has to be folded into the base compound and mixed thoroughly before pouring. I find 'Mastermould' less prone to air bubbles than earlier types I used, but I do place the freshly-poured mould on a working tumble drier to provide vibration and use various disposable 'pokers' to dislodge as many bubbles as possible. A good way of avoiding bubbles adhering to your detail surfaces is to brush a first layer of rubber over the master with an old nylon-bristled brush before pouring the rest.

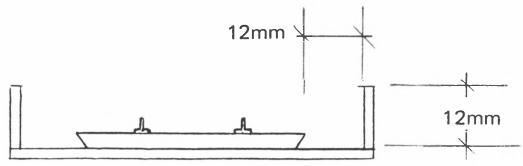
To make the mould, the master must be laid, detail side up, within the bounds of a watertight 'box' whose walls surround the master by a clearance distance of at least 12mm. The walls themselves should be laid on a hardwearing flat surface (plastic, Formica, etc) and be high enough — depending on the size and shape of the master — to give a mould thickness of about 12mm to prevent problems from premature loss of the compound's self-generated curing heat. These walls need not be either hardwearing or pretty, just liquid-tight. Toy Lego bricks are ideal, as is expanded polystyrene, Plasticine or the Plasticine lookalike sold by Strand Glass for the purpose (See *Figs 1 & 2*).

Judging the quantity of rubber to fill the box is always a guess (unless you are a serious mathematician), but fortunately the mould can be topped up with a second mix if you underestimate. The catalysed rubber compound should be poured steadily into a corner of the mould and allowed to flow over the master. A day after pouring, the rubber will be solid and can be removed from the box, peeled carefully away from the master and stood aside (the manufacturers state that it should be left a further 24 hours before use). If you've done everything right, you should have a perfect, bubble-free impression of your master ready for production.

## CASTING

Armed with your rubber mould, resin, film cannisters, syringe, gloves, roll of kitchen towel and stirrer, you can now start production. You will also need release agent to spray lightly over the mould cavity before each casting; I use aerosol 'Frekote 1711' from Strand Glass.

Fig. 1 DIAGRAM OF MOULD IN BOX



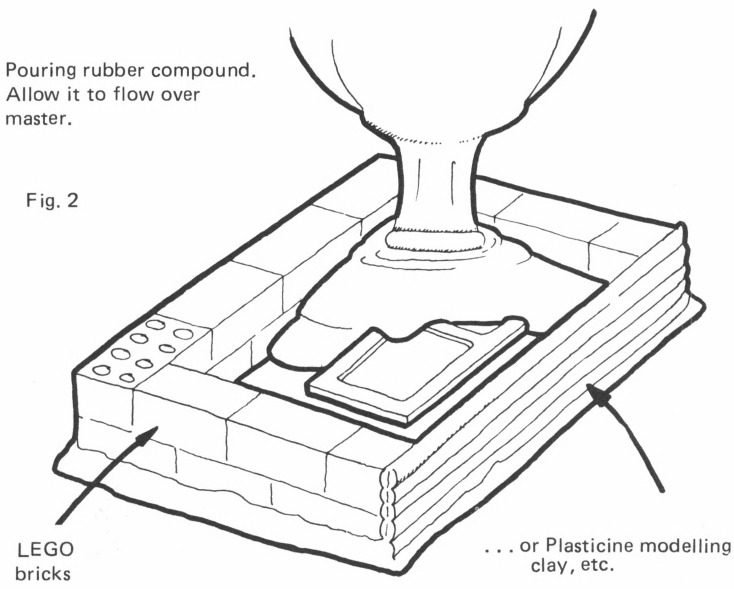




Fig. 2

*Mould release agent 'Frekote 1711'. 16oz aerosol costs around £3.60.*

After mixing the two resin constituents you have only three minutes or so, depending on the ambient temperature, to make your casting before the resin goes sticky and unworkable. This may not seem long, but it is adequate if you are properly organised.

Every master will produce its own problems for successful casting. Bolt heads are a particular problem so I ensure that after pouring, a paper-clip has been prodded into every corner and run up and down every line of bolts, in order to give the resin a chance of filling these difficult areas. For tee-irons with bolts on both sides, I made a tool from Plastikard (*Fig 3*) to flick every bolt head; this is run up and down each tee-iron a few times. There is a danger of overdoing the prodding and causing bubbles on the detail surface. An alternative method, which I have not tried, is to brush newly-mixed resin over the surface first, as with the rubber stage. The brush has to be washed out very quickly in acetone or meths if you do try this.

Quality control can also be a problem. The final product is not as good as a plastic injection moulding but probably better than whitemetal. Over the months, I have gone through many different moulds and used resin of different ages and no two castings are ever identical. Minute quantities of gas are also released by the resin and sometimes this can cause bubbles in the surface detail. The only way to substantially improve quality is by mechanically de-gassing both the rubber and

resin (I could give a good home to an unwanted de-gassing machine!). I spend much more time cleaning up each casting and making sundry repairs than actually making them in the first place. Even so, I still reject 20%–35% of van end castings as being beyond hope. With simpler masters I find this figure is dramatically reduced — I obviously did not start with a simple item!

Anyway, immediately after pouring the resin, prick any large bubbles which form on the top surface, especially those in thin or structurally weak areas; this is easier said than done — you can chase some bubbles for a time before they pop. Within about 30 minutes, the resin will be hard enough to be removed and the mould can be cleaned and lightly sprayed with release agent for re-use. Castings containing many apertures need to have the resin over-poured (*Fig 4*) and then sanded away after curing. If you do not over-pour, the casting will probably break up during removal from the rubber. However, the resin breaks very cleanly and can be stuck back together with Superglue, often with no external evidence of the misdemeanour.

There is no limit to how big a project you undertake, though it may be sensible to break the final masterpiece down into smaller components, kit style. My long-term project is a 7mm GWR Concertina 3rd coach body to be made in 44 pieces. This entails making eight masters, half of which are required only once per coach body. On the other hand, each coach requires 20 doors, and I always have the option of making another coach and another until I get bored with the whole thing.

Fig. 3 DIAGRAM OF SPECIAL TOOL

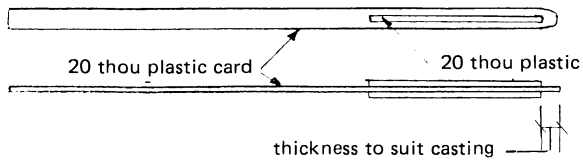
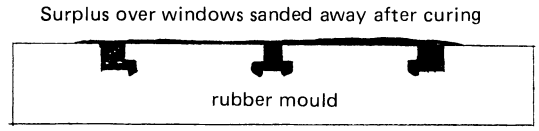
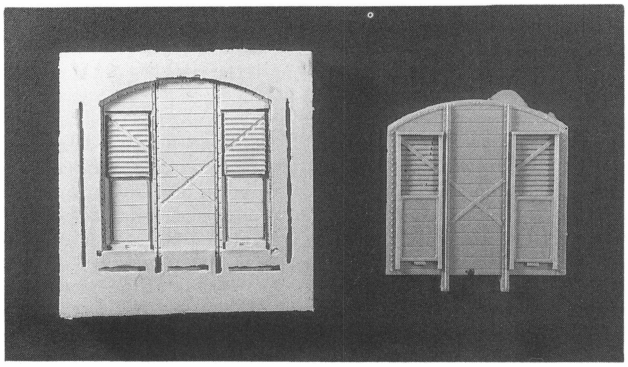
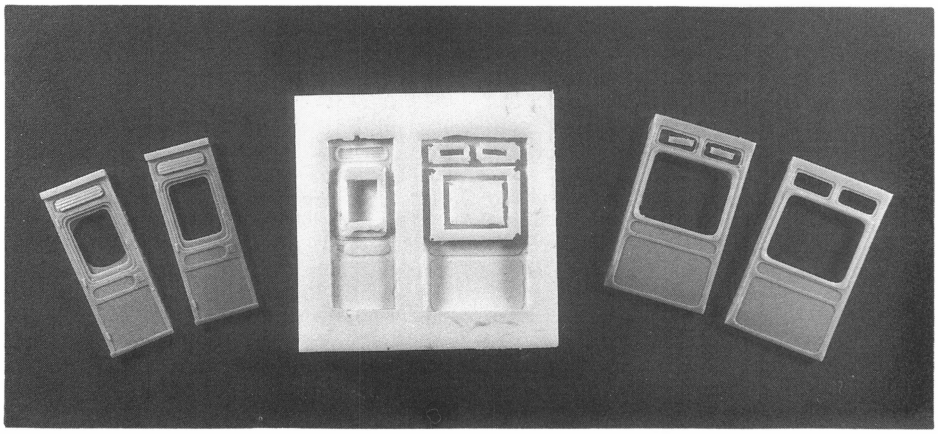



Fig. 4 DIAGRAM SHOWING OVERPOURING



*'Mastermould' rubber mould with a resin-cast V12 van end alongside. It has not been cleaned up and has also been selected to illustrate the main problems that can arise – note the odd missing bolthead, small surface bubbles (especially around the left side louvres) and the large bubble bottom centre. Even so, this casting is relatively easy to repair and use.*



*This mould, made from two masters, uses Tiranti rubber. It produces 7mm scale GWR concertina coach doors – two examples are shown to the left of the mould, one 'as it comes' and the other cleaned up – and side panels for the same vehicle. Here, too, are ex-mould and cleaned examples; the lumps in the toplights were a mistake, a vain attempt to leave space for the rubber to retract into when removing the casting. Unfortunately, they filled with resin, making removal more difficult.*

Finally, do not expect to make your fortune by going into quantity production. The time spent making the masters will never be recouped and casting the same item over and over again is very boring. I suggest you make masters for what you want, and if you sell any castings to help use up the resin, that's a bonus. Manufacturing can get out of hand — I set out with the intention of only making 20 pairs of V12 ends to recoup some of my costs, a figure long since passed. As a consequence, I have had little time to do any other modelling!

I must thank Peco for allowing me to market my van ends, my customers, and the staff at Strand Glass who have answered my questions and given sound advice. For those interested, Strand Glass now hold demonstrations on a regular basis at their ten branches, from Glasgow in the north to Portsmouth and Plymouth in the south and west.

**Additional Reading**:

*Model Railway Constructor* October and November 1977, June 1980.

*Cold Cure Silicone Rubber for Mould Making* by Alec Tiranti Ltd.

*Strand Craft Guide* (£2.45 post free) by Strand Retail/Scott Bader Ltd.

**Sources**:

Strand Retail
Scott Bader Ltd
Brentway Trading Estate
Brentford, Middx TW8 8ER (081 847 6163)

Alec Tiranti Ltd
70 High St
Theale.
Reading, Berks RG7 5AR (0734 302775)
(Catalogue 75p in stamps).

Suitable syringes are obtainable from:
Blackwell's of Hawkwell
733/735 London Rd
Westcliff-on-Sea, Essex SS0 9ST (0702 72248)

*Overleaf: A 7mm Siphon G built from the author's resin components.*

# RESIN CAST SIPHON G in 7mm

**You've heard how Richard de Camin makes the components. DAVID LOCKWOOD explains what it's like to buy and use them:**

I love trade shows where there are opportunities to see the latest products and have a good browse around; the problem, of course, is temptation – it's all too easy to return home with more than intended. Often, such impulse buys can be a cause for regret; perhaps you spend more than you can afford, perhaps you end up with something that diverts a current project on to a shelf to be completed later, if at all. Or, worse, you end up buying what the Americans call a lemon. My worst impulse buy suffered from all of these things and I still have a partially-completed GWR 'Bulldog' etched brass kit which I doubt will ever be finished.

However, I have had no regrets since I succumbed to the impulse to buy a JigSawBits set of resin castings for a GWR/BR Siphon G to Diagram O22, which I spotted at the recent O gauge trade show in Langley. I was helped by hearing that the kit was to be a limited production run. Perhaps kit is the wrong description; the castings made by Richard de Camin are clearly labelled as a set of body side and end castings. Those in the box were very clean and had been cleverly arranged in sections to minimise the number of different production moulds required and to overcome the length limitations of the moulding process. The brief instruction sheet included was quite adequate and gave all the necessary information.

I made a box-like sub-structure, as recommended, to mount the cast sections on. It is stressed in the instructions that the castings are purely decorative and should not take any structural loads. I was fortunate in having to hand double length sheets of various thicknesses of plastic card, thus avoiding the need to make unwanted joints. I used 60-thou for the sides and top; the floor was cut from 80-thou with 60-thou doubling plates at the location of the bogie centres and at the ends where the buffer beams were to fit. These plates were inset on the sides and ends to allow for the thickness of the cast sections. Internal partitions were also fitted, particularly near the middle where the natural tendency is to grip a model in a pincer hold. Once this had hardened off, it was trimmed to final size by scraping.

A series of 6mm holes were drilled either side of the centre line in the floor and false roof, making sure that the positions did not fall where later attachments would be made. The benefit of this is twofold: it reduces the overall weight and allows the enclosed box to breathe. I have found from previous experience that the solvents used for joining plastic card, if trapped, can, over a period, cause softening or bubbling where laminations have been made.

The resin cast side sections were cleaned up on the joint faces to adjust the overall length. At this stage, provision was made for the later attachment of the details on the ends. A notch was filed on each side of the ends for the insertion of the lamp irons and the holes drilled for the footsteps and handrails. The sections were then attached to the box structure using an impact adhesive. Care was taken to pack the ends out with appropriate thickness of plastic card in the centre, to hold the ends square and to permit the screw fixing of the corridor connections through the ends without any danger of cracking the castings.

I have never found an easy way of making roofs. I do not like mixing wood with plastic on models because of their different rates of expansion and the possibility of joint failures. Also, I don't find woodcarving particularly easy. Despite reading of other people's success with hot-forming roofs in the oven, my attempts have only ever resulted in dismal failure and a lot of wasted plastic – and you still have to carve a former! More recently I have resorted to laminating up layers of styrene sheet and filing and scraping to the required profile, but this is hard work and results in a heavy roof. This time, I decided a rethink was required; I remember reading of E. R. Francis's method of forming coach side tumblehomes by stroking the plastic against a wooden ruler to permanently deform it to shape. I tried this on 20-thou plastic sheet and bingo, success!

Before fixing the resulting roof into position, longitudinal plastic card members were set on top of the box structure, matched to the height of the roof profile of the ends. Again, these were carefully filed and scraped to the angle of the roof at each point. It is not a good idea to put in cross-profiled pieces, as there is a danger that with the passing of time, the roof will sag between the supporting profiles – something which might look authentic on an 18th century barn model but is definitely out of place on railway rolling stock. The roof was attached using impact adhesive again, which immediately held it to shape without any difficulties. Rain strips were cut from 20-thou sheet and attached with Mek-Pak, the curves being laid in by eye. The gas lamp tops were turned from plastic sprue from an old 3H kit, a useful source of polystyrene rod, being of larger diameter than most sprues these days. The gas piping was set on the roof using 20-thou plastic rod and 15-thou for the clips, glued direct to the roof for robustness. A useful drawing of these roof details appears in *GWR Siphons*, by Slinn & Clarke, published by the HMRS.

The body was now ready for detailing. I have no great confidence in stuck-on details remaining attached after reasonable handling and wear – I always seem to come home after a day's running with odd bits that have dropped off! So, the footsteps were folded up from bits of 20-thou brass – remnants from an etched kit – and drilled. A slight inaccuracy on hole centres is not too important at this stage as the dimples pre-drilled on the cast ends vary slightly and it is possible to mix and match. The footsteps were superglued into place with two pieces of 20-thou brass wire inserted through the holes. These were then filed down to represent the bolt heads. So far they have held in place despite heavy handling during the later

stages of construction. Handrails were folded up and superglued into drilled holes. Unfortunately, the attachment part of the side handrails are not moulded in. These were represented by drilling an adjacent hole and inserting and gluing in a piece of 20-thou plastic rod. The door hinges, which obviously could not be moulded-in during casting, were added by gluing small lengths of 20-thou plastic rod into position. Label holders were made from a scrap of 10-thou plastic sheet and wire. The protruding part of the lamp-irons were filed to shape from brass sheet and inserted into the pre-filed notches. The remaining part of each lamp-iron comprised a piece of plastic card embossed with the bolt heads and stuck into position. Door handles were slices cut with a piercing saw from a length of 1/8in extruded brass T-section, one length of which has lasted me many years and quite a few coach constructions. I hope it is still available.

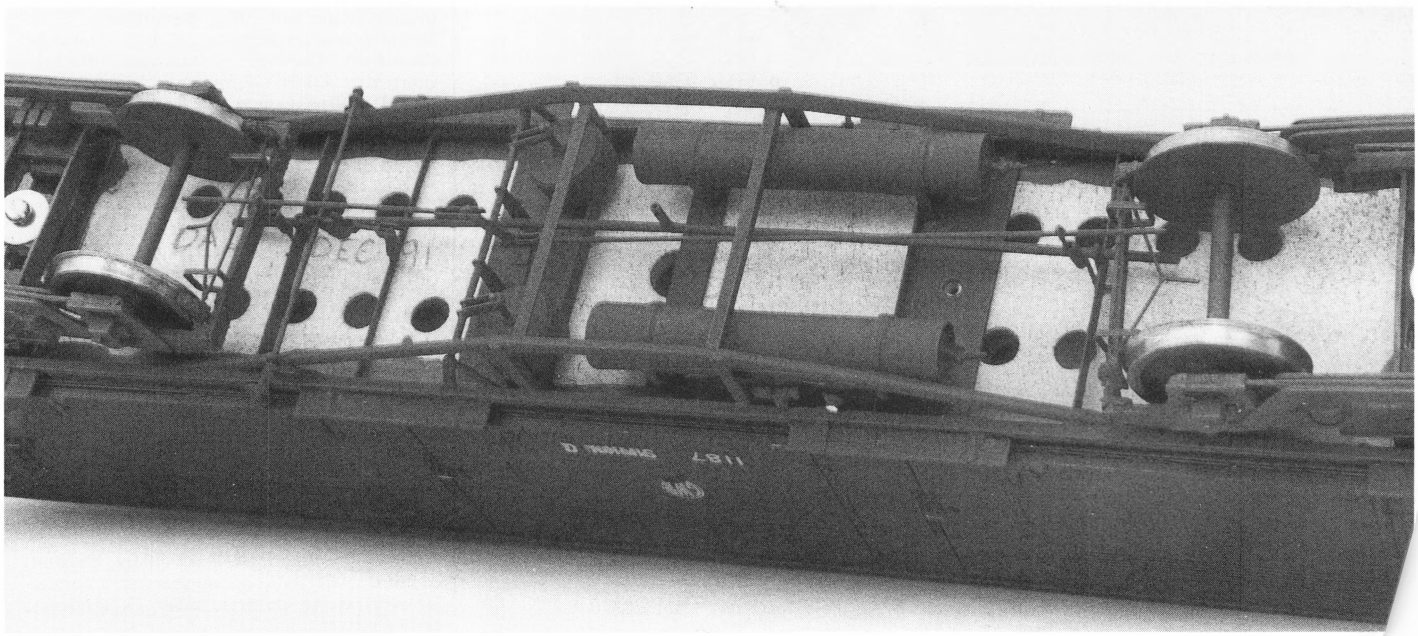
I happened to have a spare pair of DJB scissor-type corridor connections in stock – a real watchmaker's job, these, and very trying on the eyes. I was pleased that quite a few spare rivets were included, but they still pinged off in all directions. The fall-back position here happens to be the common domestic pin, the diameter of which is right, and the heads can be filed down; however, riveting won't work with them and a delicate touch with the soldering iron is required if they are to be used for working scissor action. Having assembled one, I discovered that the housing against the end is not the correct pattern, so new parts were made to replace that bit of the etching. The completed corridor connections were attached to the body using a dog-plate across the rear and a self-tapping screw passing through a clearance hole in the resin and into the plastic box structure. In my case, I actually cut slots in the resin to correspond to the projecting tags at the rear of the corridor connections. This was achieved with judicious use of drill, knife and file but cost me a broken drill and was probably not worth the trouble. Incidentally, a piece of black nylon stocking makes an admirable top cover for the assembly.

There was little difficulty in finding plenty of information on the body details with many photographs and drawings available in the published works. It is a different matter on the underframe details. The two-dimensional drawings available in the Slinn & Clarke book are not very helpful; a better drawing by S. M. Hunter appeared in the *Model Railway News* in October 1952. It is a great pity that there were so few underframe photographs taken showing the details clearly. The model must look right from normal viewing positions but for a running model I cannot see the logic of spending a lot of effort, especially on accurate representation of details that will never be seen when the model is standing on the track. My working models must be robust and I compromised on the detailing in order to make the finished model as strong as possible.

Solebars were cut from brass channel section 5mm x 2.5mm and buffer beams folded up from sheet to match the channel section. The width of the top fold was made to match the distance between the solebars, thus making a solid corner when soldered up. Holes were drilled through these for attaching the chassis to the body. Inevitably, I had to drill new holes later as my first choice of position fouled the bogie wheels. A riveted shim overlay for each buffer beam was made and soldered on. Again, if I had thought ahead properly, I would have cut these to include the bottom footstep which could have been folded over; however, these were successfully soldered into place later using the dodge of cutting a long strip first and trimming to length once attached. Footsteps were filed up from 30-thou brass with tabs on the back; slots for these tags were cut through the solebars using a drill and a sharpened small screwdriver as a chisel, and cleaned up with a fine needle file before the steps were soldered in from the back. I was unable to buy the appropriate size angle for the trussing, so I made use of some 3/32in square section I had. This was filed at an angle on the back, effectively making it appear to be an angle section except when viewed from underneath. The shorter lengths, where this ruse could not be employed, were formed up from over-thick sheet and filed down to give a sharp corner.

I couldn't find any suitable tube from which to turn the gas cylinders, so eventually these were rolled up using brass shim soldered to turned ends. Hardwood was used to turn the vacuum cylinders and these were held in place by soldering the actuating piston to the chassis at one end and a washer at the other; spare Slater's cast gas valves and pressure gauges were utilised. The rest of the details were fabricated from sheet and wire soldered in position. DJB GWR square-shank buffers were used but the springing arrangement was changed as there was insufficient space for the whitemetal bracket to be fitted. Small brass collars were turned up and slotted across the end and fitted to reduced length shanks to replicate the springing method on the Peco/Webster wagon kits.

A pair of Cavalier 9ft wheelbase 'American' bogies were purchased and assembled using low-melt solder in accordance with the instructions. The hangers were deliberately made thicker than scale to minimise the risk of their bending, something that can be disguised somewhat by filing generous edge radii. I originally intended to solder and pin them to the whitemetal to be certain that they would not become detached; in the event, this proved unnecessary as the solder attachment proved to be quite adequate. There were no brake shoes or rigging included in the bogie kit and I deliberated whether to bother. However, as I had incorporated a fair amount of detail in the underframe already, I settled for fitting only the end shoes, the more visible ones. My stores included some whitemetal brake shoes of unknown age and origin which were quite suitable. Thin strips of brass were inserted into saw cuts in the shoes as hangers and soldered; the assemblies were then soldered into the corners of the bogie with some difficulty, although the job was made



Photos: TONY SMITH

easier by removing some of the cast white-metal projections on the inside end face. Etched pull-rods from a Slater's kit were fitted together with safety straps on the ends only.

I used small self-tapping screws to attach the underframe and the bogie mounting plates to the body. Trial drilling holes in a scrap piece of suitably thick Plastikard soon determines the correct size of drill to use; the hole must not be too tight or the screws will bind or permanently deform the plastic. It is helpful to relieve or countersink these holes first. I have employed this method of attachment for 20 years and found it to be totally reliable.

The worst part of the project was the painting – make or break stage! I have seen many indifferent models made to look better as the result of a good paint job – and many a good model spoilt by its finish. The usual problem of paint adhering reliably to brass was considered. I have noticed that with handling, the paint on the prominent details tends to wear fairly quickly, showing the brass colour through, despite care taken with preparation. This time I applied Carr's chemical blacking to the footsteps using a cotton bud; it will be interesting to see how this wears in practice. The buffer heads and screw couplings were similarly treated.

The body and underframe were first sprayed with a car aerosol primer. The body was then airbrushed Railmatch GWR brown, which seemed a better colour than the aerosol Precision Paint I tried to use. I have had reasonable success using aerosol cans in the past, but, perhaps because of their age, they have all played up lately, blocking up or splattering. I persevered with the dirty black aerosol can for the underframe but the paint still took a long time to go off and dried streakily; I took a chance and left it alone on the assumption that the finishing varnish would even out the streaks. Methfix transfers were applied in the style of the late 1930s and the complete model was sprayed with matt varnish. Fortunately, the streaks disappeared and a nice flat finish resulted – not my best paint job but adequate for a working model. I will no doubt be encouraged to apply weathering, but my argument is that within my modelling period, it is quite possible that this vehicle has just been out-shopped.

A fair amount of time was expended on this project but that's something I have plenty of at the moment. I feel that the result is a very nice model, with which I am well pleased. I have long wanted a rake of Siphons but have been put off by the problems of scratchbuilding convincing looking louvres. Hence the reason for my impulse buy. I heard a suggestion that the next cast resin offering will be an outside-framed Siphon G. If it comes to pass, then I will be a willing customer.

P.S. The steam and vacuum pipes were deliberately left off pending a decision on auto-couplings.

**GAUGE O GUILD**
**NORTHERN SPRING CONVENTION '92**
**Saturday 9th May 1992 – 10.00 - 5.00**
**Halifax Leisure Centre, Halifax, West Yorkshire**
(follow signs for Leisure Centre)

This year's Northern Spring Convention is being organised by the Cheshire Group of the Guild.

The Leisure Centre has car parking facilities and light refreshments will be available, with the Convention contained within one hall.

**LAYOUTS**

*Test Track* – North East Cheshire Guild Group.

*Chapel Amble* – new layout by Fred Walton, a recent convert from 4mm scale. Fictitious GW branch line terminus in Devon in the early 30s.

*Waterbury Town* – by Philip Holme. Based on mid-Bedfordshire, close to LNWR and LM main lines, with assumed connections to each.

*Oval Ash* – John Allison of Warley MRC.

*Victoria Wharf* – Sutton Coldfield Railway Society, inspired by John Allen's 'Timesaver' shunting problem.

*Kings Wharf* – Malcolm Strong of Warley MRC, a purely imaginary place situated in part of a large dock area around the turn of the century.

**TRADE:** AGH Miniature Engineering, AK Models, Ambis Engineering Division, Bairstow Models, Andy Beaton, Bee Jay Models, Brian's Kits and Bits, Brumtrams, CCW Model Manufacturing Co., C & L Finescale, Chowbent Castings, Connoisseur Models, Conti Kits, Eileen's Emporium, Paul Fletcher Models, Freightman, Gateneal Limited, Guild Trustee and Executor Services, Haywood Railway, Headstock Publications, Home of 'O' Gauge, Janick Models, Kenard Models, J. King (Model Supplies), L. H. Loveless & Co., MTK, Majestic Models, Marcway (Pointwork) Products, G. Mellor, Mendip Models, Meteor Models, Midland Railway Centre, The Midlander, Model Signal Engineering, Modelex, Modellers Mecca, Modellers World, Oakville Models, Parkside Dundas Limited, Procast 84, Quainton Road Models, RJH Model Railways, Railwood Products, Roundfield Engineering, Rutland Model Assoc. (Cherry, Moore, Kirtley), S & D Models, Sam Engineering, Les Seppings, M. G. Sharp Models, Shedmaster, Slater's Plastikard Ltd., Specialised Products, Tower Models, Tractopak Ltd., Eric Underhill Models, Walsall Model Industries, Westdale Coaches.

**Admission:** £1 to GOG members, £5 non-members, £2 to non members as a concessionary rate to children under 18, students, senior citizens, and UB40 holders.

# MINERAL WAGON VARIETY

## PART 1 – WELDED 16-TONNERS

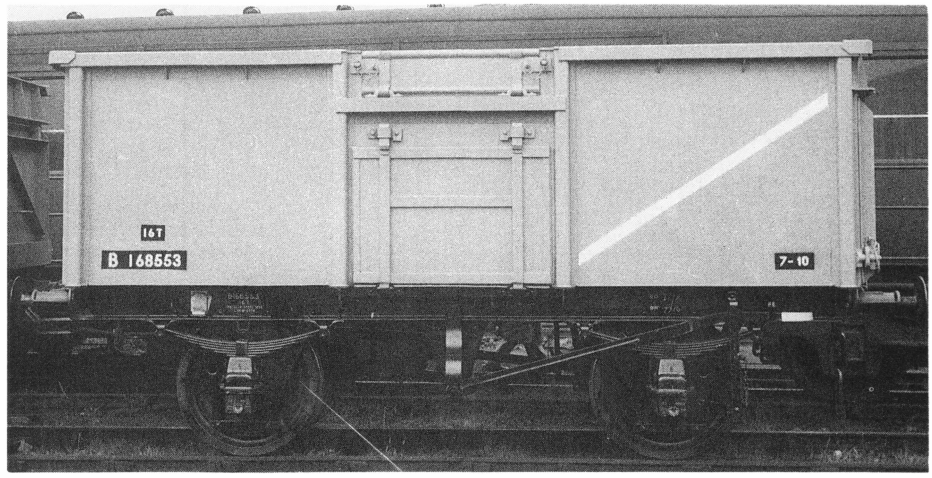
**PETER TOTMAN looks at BR-built 16-ton mineral wagons and ways of representing them in 4mm scale, using inexpensive, good-quality plastic kits:**

By the early months of 1988 the 16-ton mineral wagon had finally disappeared from revenue traffic, although a few creaked on in departmental use. So the most numerous vehicle type built by BR passed from the railway. In total, British Railways constructed about 239,673 wagons between 1950 and 1959; it may have been more but the process was so frantic that no one is sure of the real number. Paul Bartlett, the author, estimates the rate of production at about 200 per week over the peak seven-year period of construction – a huge number by any yardstick. Before I dive straight into modelling details I feel I must give some background to make some sense of the various mineral diagrams.

The origins of the 16-ton design lie with a 15-ton steel wagon built before World War II by Charles Roberts & Butterly Co, as a more economic alternative to the wooden 12-tonner. From these grew two designs – a welded type ordered by the LMSR to Diagram 2109 (LM) constructed through 1946/7, and a riveted type ordered by the LNER to Diagram 188 (NE), built between 1945 and 46. These designs were perpetuated by the MoT as Diagrams 1/102 and 1/103 respectively. Both wagon types had double brakes, bottom, side and end doors but no top doors. In this article I concentrate on the BR building programme. The history of these early vehicles has been covered by several authorities whose details are given in the bibliography. These wagons ran side-by-side with the BR builds until the 1960s and perhaps the editor will allow me to expand upon their types at a later date. To illustrate these diagrams I have included photographs of some models although, strictly, they are outside the scope of the article. Modification was made by the MoT to the design during 1947/8 and top-flap doors were added and new Diagrams 1/104 and 1/105 issued.

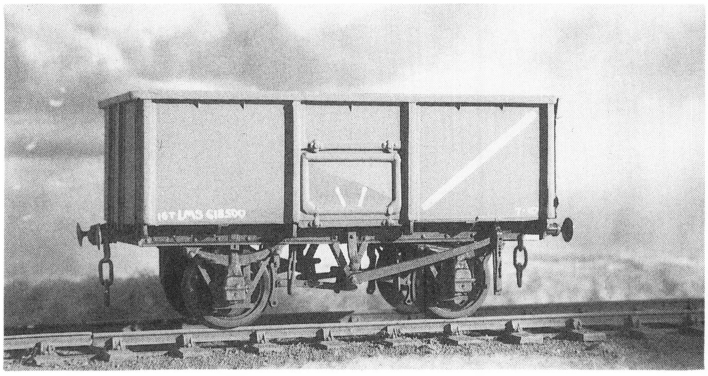
After nationalisation, British Railways ordered another 1,350 wagons to Diagram 1/104. These had top and bottom doors and double brakes. Diagram 1/106 vehicles were essentially similar to Diagram 1/104, but the length and width increased by 1/16in and 1/8in and the top door by 1/8in. A total of 2,800 were built, most double-braked, but some

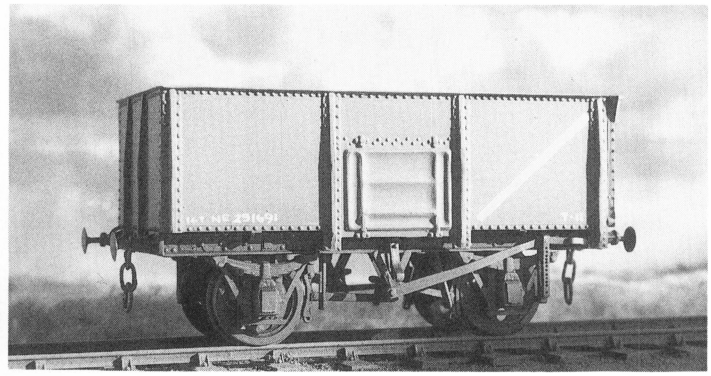
*An ice-bound pre-BR design Diag. 1/105, seen here at Slateford in February 1963.*




*An almost pristine BR-build Diag. 1/108 at Fort William in 1954. Note the reinforced brake lever.*

*Diag. 1/117 with clasp brakes, pictured here at Muirkirk in 1959.* Photos: DON ROWLA





Left: *One of the originals – the LMS 16-ton mineral, produced from a Cambrian kit.* Right: *The LNE type, also from a Cambrian kit. This model, like the LM version, has replacement ABS brakegear, compensation and Slater's buffer rams.*

Morton-braked (implying that the bottom doors were out of use or even not fitted). Diagrams 1/108 and 1/109 were issued to cover the bulk of the mineral wagon programme, the wagons being identical to Diagrams 1/104 and 1/105 but lacking bottom doors, hence the new diagrams. Early lots of both types had double brakes but the vast majority had Morton.

Diagram 1/111 were identical to Diagram 1/106 but lacked bottom doors. Those to 1/114 were identical in body size to Diagram 1/111 but were supposed to be vacuum braked; only a third of the lot were so equipped, the rest being built unfitted. British Railways experimented with aluminium bodies at one time; they built 100 to Diagram 1/116 but no more were ever constructed. The final diagram issued was 1/117, for mineral wagons essentially a 1/111 with the sides increased by 1/16in to squeeze in an extra cubic foot of coal.

The table here cobbles together the basic data, and, I hope, makes some sense of the mineral wagon saga.

| *Diagram* | *Built* | *Total number* | *Construction* | *Top & bottom extra doors* | *Double brakes* | *Morton brakes* | *Clasp brakes* |
|---|---|---|---|---|---|---|---|
| 1/104 | 1950 | 1,350 | Weld | t & b | 1,350 | | |
| 1/106 | 1950-51 | 2,800 | Weld | t & b | 2,400 | 400 | |
| 1/108 | 1951-59 | 197,459 | Weld | t | 2,950 | 187,674 | 6,835 |
| 1/109 | 1950-59 | 25,014 | Rivet | t | 500 | 23,809 | 705 |
| 1/111 | 1950-54 | 4,400 | Weld | t | 1,500 | 2,900 | |
| 1/114 | 1951 | 300 | Weld | t | | 200 | 1,001 |
| 1/116 | 1954 | 100 | All rivet | t | | 100 | |
| 1/117 | 1955-58 | 8,250 | Weld | t | | 7,251 | 999 |

## MODELLING

The majority of the models I have built have been based around the Diagram 1/108 produced by Parkside Dundas, catalogue PC21. The quality of the mouldings is superb and in most areas dimensionally accurate. The kits are usually sold com-

Fig. 1. Diag. 1/108

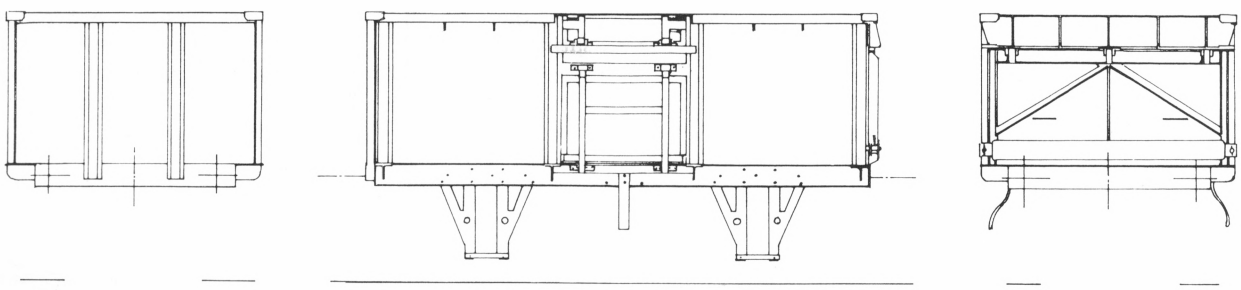
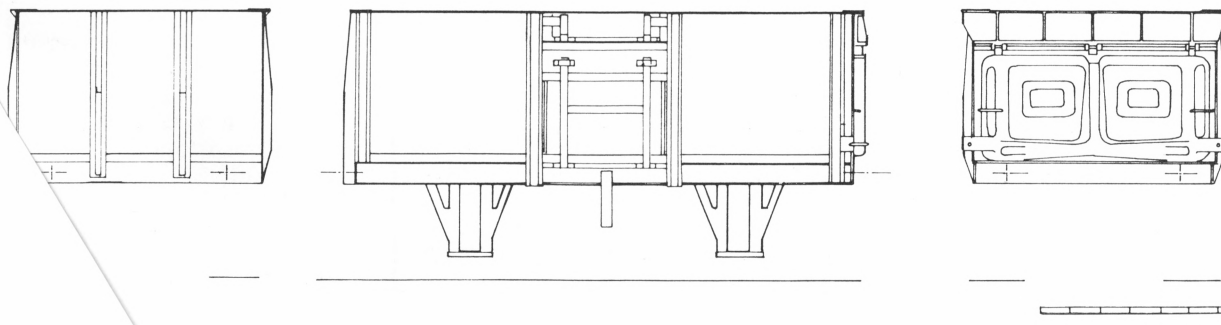


Fig. 2. Diag. 1/109

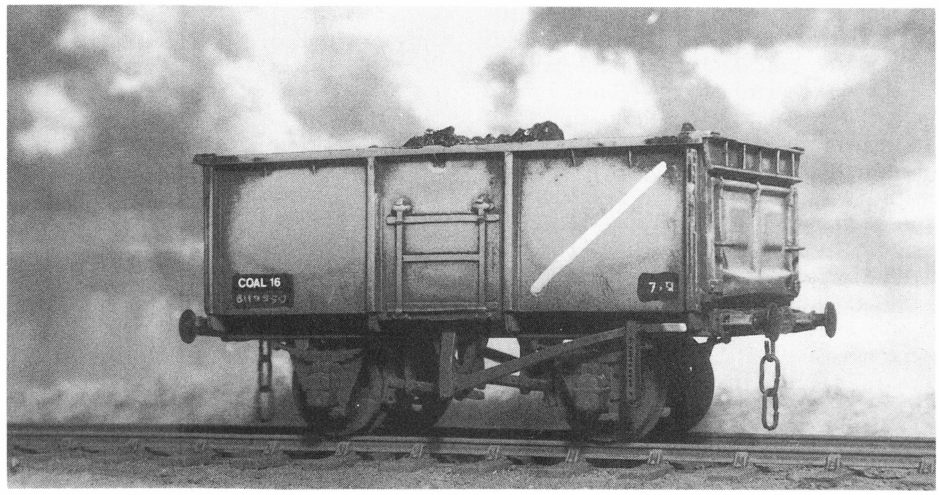


plete with Romford OO wheelsets, but Kean-Maygib wheels in OO, EM and 18.83mm gauge can be had by exchange (if kits are bought direct from Parkside Dundas by mail, the wheel type can be specified with the order). I have also found this supplier very obliging in the supply of extras and spares. Dapol also produce the old Airfix mineral wagon kit and a good review by Bob How appeared in MRJ No. 47; the kit is a lot older than the Parkside one and a deal chunkier, but a lovely starting point all the same.

No matter what modifications or butchery one wishes to perpetrate on the bodies, a few improvements are common to all conversions in enhancing the look of the models. I feel it is always in the area of the brakes that plastic wagon kits fall down. I don't think I have come across one manufacturer who has produced convincing moulded plastic brakes. One comes across exquisite underframes, perfect axleboxes and springs, solebars bristling with crisp rivets and bolt heads, then blobby bits for push rods and shoes. And brake levers . . . I hardly like to mention brake levers.

Help is at hand these days. My favourite solution has been around for a number of years in the shape of ABS 9ft Morton two-shoe brakes (U04) – lovely, lovely whitemetal castings, looking superb straight from the packet. Cleaned up, they're even better, and if the cast safety straps are replaced with strip, just about perfect. The brake levers do show the limitations of whitemetal, but by careful filing to reduce the apparent thickness on the top edge, it is hard to tell their origins. The pin-down guard can be carefully drilled, No. 80 or so, and the slot opened up with a craft knife and cleaned up with a needle file to produce quite impressive results. Do watch your fingers though – those tiny drills seem to burst through the castings in a sudden rush and can penetrate the old fingertips to quite a depth; the same is true of the craft knife and it can become a painful process if one is batch building. By the by, I use a Stanley model 10-595 retractable for this job. For years I'd been a Swann-Morton scalpel chap, but in some applications the extra strength of the Stanley blades is advantageous while retaining the precision and sharpness of a scalpel.

For some applications the cast lever will not do but it is quite easy to file up a lever from 2mm wide nickel or brass strip to suit, or Perseverance (and others) make an etched set of Morton brake levers and guards. John Flack can supply brass or nickel strip 0.33mm thick – almost exactly the scale inch of the prototype lever. To make one's own brakes is not too difficult in any case. Chris Crofts gives a vivid description of the whole shooting match in his memorable series in MRJ Nos. 12-15.




*A Diagram 1/102 mineral running in later condition, with a replacement pressed end-door, fabricated side-door and welded-up bottom doors. It has 1960s brandings.*

Parkside's V-hangers are nicely moulded and I tend to utilise them where possible, but again, chamfer the edge to reduce the apparent thickness. If you wish to replace the Vs, D & S Models can supply etched replacements – catalogue 500-VE-1.

The other area where I find plastic kits weak is that of buffers. Plastic does not make for good buffer heads. As a matter of course I replace these, as a whole unit using ABS castings (U03) or just the rams using Slater's product No. 4070. MJT 2300 does the job nicely, too.

Far be it from me to start up the old compensation argument, but in my chosen 4mm gauge of EM, I have found no advantage in compensation up to a 9ft wheelbase, 10ft is marginal and at 12ft and upwards it is a positive advantage. I get my compensation units from the EM Gauge Society, but they are available from a number of sources (MJT for example). On the subject of suppliers, most of my bits and pieces come from Mainly Trains at Watchet; Dave Cleal seems to carry a vast stock of just the right things and operates a mail-order service par excellence, much lauded in these pages – I can thoroughly recommend it.

## WELDED WAGONS

It always struck me as strange that British Railways issued so many diagrams for essentially the same wagon – there was normally more variation within a diagram than between diagrams! Welded wagons were covered by Diagrams 1/104, 106, 108, 111, 114 and 117. Diagrams 1/104 and 1/106 both had bottom doors necessitating the use of double or either-side independent brakes. To reproduce the system, two V-hangers are needed on each side to support the brakes. For the inner one I used the existing plastic offering suitably chamfered to reduce the apparent thickness. The outer one was supplied by the EMGS as part of their old W-iron fret but D & S make the required item in the form of DS100-V, which comes complete with etched washers to thicken the boss. Again, I would also draw your attention to Chris Crofts' articles if you wish to fabricate your own items.

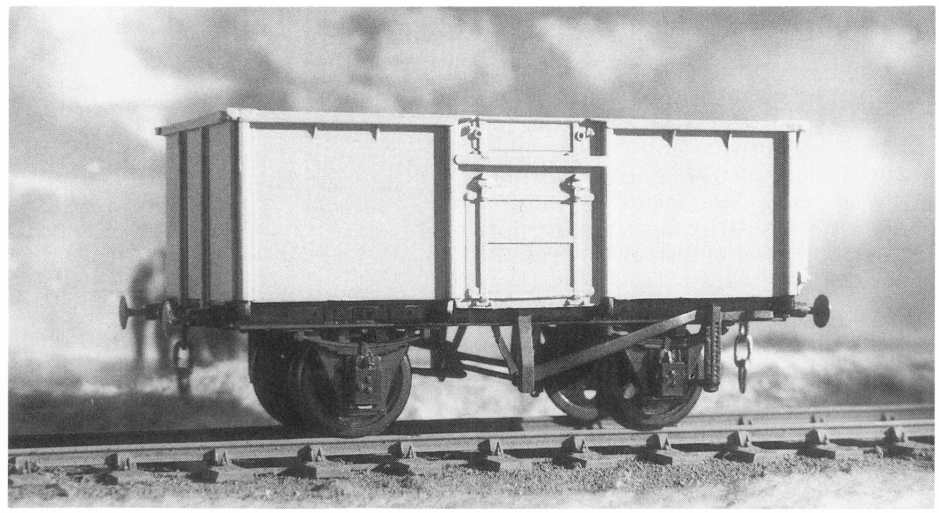
By far the biggest chunk of wagon building was to Diagram 1/108, over 197,000 in eight years. They covered the whole range of brake types, buffer types, end door types and couplings. Referring to the table, about 3,000 had double brakes, 187,000 Morton two-shoe and some 7,000 with vacuum clasp brakes. In the 1970s many unfitted wagons were re-equipped with Morton four-shoe vacuum brakes as a cheap alternative to clasp VB.

Diving straight into the underframe, I replace the brakegear with ABS U04. The two-shoe brakes fit as in *Fig. 3*. The standard way of fitting was with the brakes and cam lever on the side with the end door on the left, but this was not the case in later years. If you just want to stick with unfitted wagons, a bit of variety can be introduced in the form of rod reinforced brake levers. At first, I produced these by soldering 0.3mm wire to Perseverance levers, then filing to shape. Later I found I could stick a sliver of Microstrip to a painted ABS cast lever using Mek-Pak liquid styrene cement – and nothing has fallen off yet. Example noted with reinforced levers inclu B561490, B210895 and B569425.

One addition that makes just that little bit of difference to the look of a model is to add the bracket between the bottom of the brake guard and the W-iron. I make mine out of some 8-thou tin sheet obtained from K & S metal sections (in most model shops), and stuck in place with Superglue or Uhu; a touch fiddly, but well worth the effort – I always manage to drop the darn things but keep telling myself that this is a hobby as I scrabble on the carpet after them.

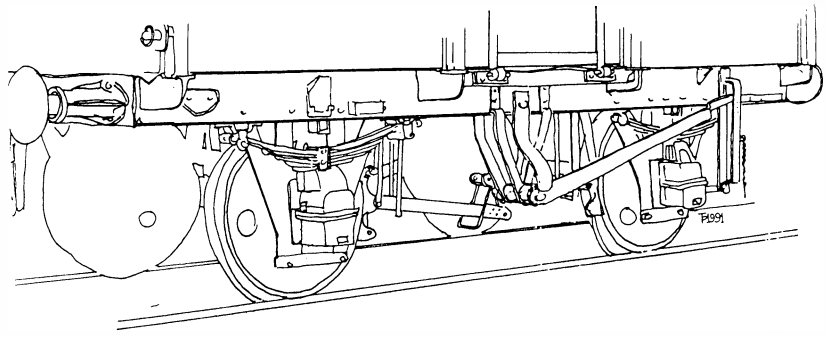
In 1951 an experimental batch of wagons were outshopped with vacuum brakes for brake trials (1/114). As a result BR placed orders for many lots with eight-shoe clasp brakes. Unfortunately, these wagons soon ran into trouble on coal hoists and at power stations where wagon handling machinery tended to rip all the bits off the wagons, quite apart from the grumblings of the shunters who had the extra chore of all those vacuum pipes to couple. The programme was halted abruptly, resulting in wagons being outshopped unfitted but with clasp brakes, and mixed lots of fitted and non-fitted wagons. In 1966 another decision was taken to convert 5,000 wagons to Morton four-shoe vacuum. Their numbers ran in the series B562200-B583299. ABS provide four-shoe brake capacity in the shape of pack U08. They benefit from replacement safety loops and thinned levers but still look good straight from the bag. Vacuum braked minerals had tie-bars between the W-irons to resist the greater brake forces; in some cases they were L-section and others were plain flat strip. In any case, I remove the existing moulded tie bars as they bear little resemblance to either type. Replacement material is available from John Flack in the form of 1mm strip and L-section brass. These can be gently filed down to a scale depth of about 0.7mm.

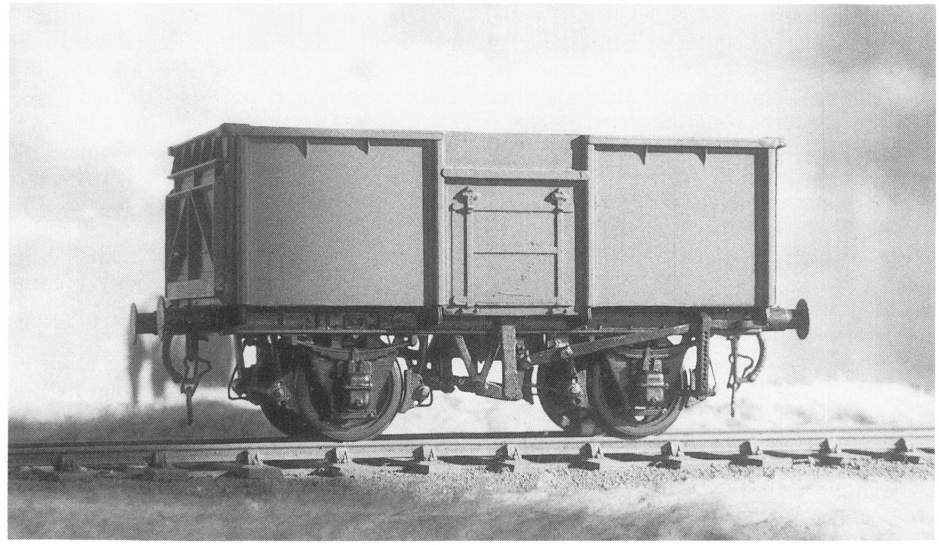
Eight-shoe clasp brakes were fitted to nine lots of Diagram 1/108. They comprised the wagons caught in the 'vacuum brake – don't vacuum brake' fracas, and in many cases ran unfitted, minus vacuum cylinders but with all the other bits intact. The features of these wagons are not quite so straightforward to reproduce, but I hope the diagrams help to make all clear or at least less murky! Suitable brake shoes are available in pack F117 from ABS, as are the brake cylinders for vacuum brake sets – not independent, unfortunately). D & S Models do a set of very nicely etched brake gear (BG-1), or they can be fabricated from rod and strip without too much trouble. The D & S yokes are not quite the right shape, but in the dark and with wheels the differences



*The 'standard' BR Diagram 1/108 as built – the design most people are familiar with. The model features plate axle boxes, which will be described when we come to look at repairs and rebuilds.*

Fig. 3. Detail showing double brake





*One of the Diagram 1/108 wagons converted to clasp-brake. The vehicle carries LM/LNE self-contained buffers and has had the top flap door removed and plated over (about which more anon).*

The levers either have to be filed up from 2mm strip or craftily shaped from ABS levers, if you can live with the slight lack of fullness about the fulcrum. It does mean that you do not have to worry about making the brake guard, a finger-singeing exercise if every there was one. The third course of action is to fabricate the levers and graft them on to an ABS brake guard. The V-hanger supporting the non-existent vacuum cylinders and the cross shaft are quite prominent on non-fitted examples. They can be included as etched items from D & S (500-VE-1) or a very neat cast V-hanger manufactured by Kenline and available in pack reference No. 26.

Having dealt with the underframe, next come the buffer beams. These wagons were turned out with either Oleo buffers or something that is (or if not, looks very much like) an LNE/LMS self-contained buffer. ABS make these (pack F723) and MJT make Oleo buffers (pack 2350). The ones I used came, many years ago, from the Southern Railways Group, but I have not seen them advertised for a while. With the longer reach buffers of fitted stock, the coupling hook was packed out from the buffer beam on a metal bracket arrangement easily fabricated from brass strip. Please don't try to find this feature on my model – I forgot about it! The situation has been rectified in a hasty retro-fit. Red faces all round.

Vacuum brakes are not much use without brake pipes. These were made from 5-amp fuse wire wound onto a 22 SWG core, the lot soldered up solid. I have had good results by soldering Kenline underslung pipes (pack 6U) onto a wire spigot. The Kenline pipes are lovely but sprout from the beam rather than worming up from the depths as the real thing. MJT make underslung pipes (pack 2951) as well. Adding the vac pipe retaining bracket from Microstrip makes a nice finishing touch.

A few wagons were fitted with self-adjusting brakes, but as yet I have little idea as to the arrangement of components. Is there anybody out there who does?

The last variant on the welded body design was the diagram 1/194, a 16-ton wagon with a 10ft wheelbase using redundant 'palbrick' underframes with a motley collection of RCH, BR and LMS clasp vacuum brakes. A total of 394 conversions were made, using the number series B596000-B596393. The model was constructed using a Parkside Dundas 10ft wheelbase underframe kit (PA 09) and Parkside body parts. In fact Parkside kindly supplied me direct with the chassis and body parts as a package, so many thanks to them. The first move is to remove all the top door detail with a ¼in

Fig. 4. Diag. 1/108 Clasp brake detail

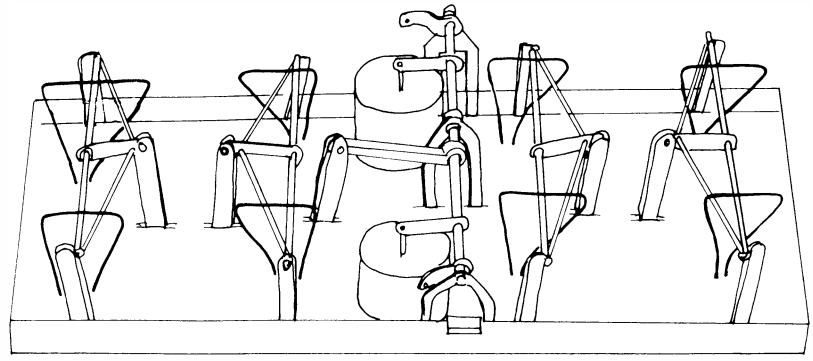
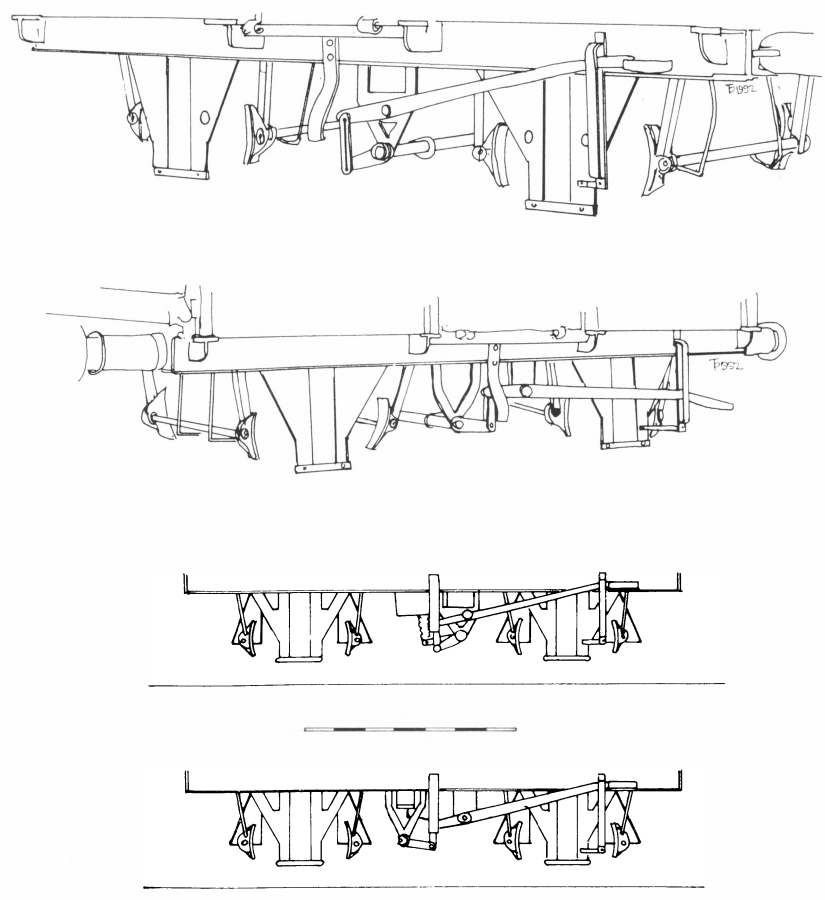
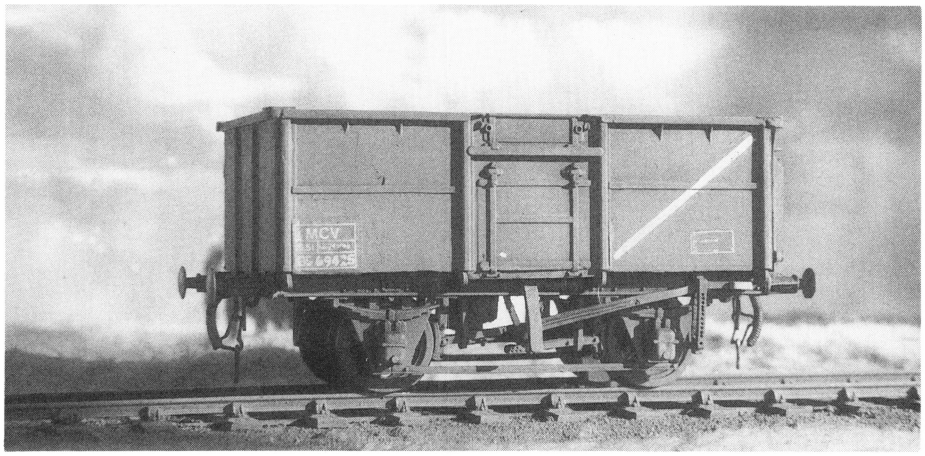


Fig. 5. Diag. 1/108 Clasp brake detail





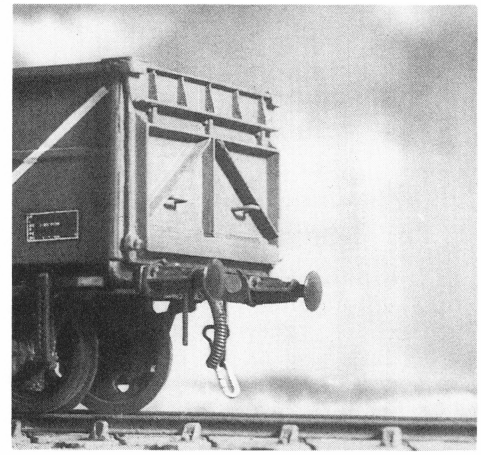
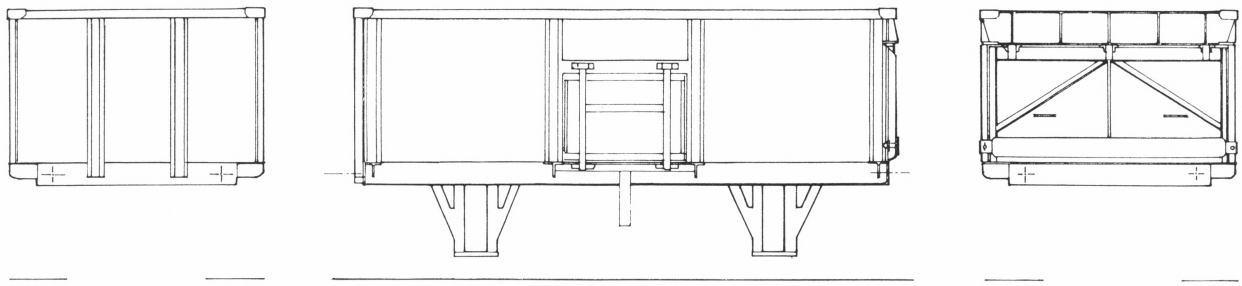


*Diagram 1/108 converted to Morton four-shoe vacuum brake. It retains the top flap door but the shoes are re-plated and the join covered with a fillet plate. Note the L-section tie-bar and the reinforcement rod on the brake lever.*

Fig. 6. Diag. 1/194, 10ft wheelbase



chisel, the best instrument I have ever come across for plastic kit work – a tool capable of great precision in tight places. Once all is cleaned up, the body parts either side of the drop door stanchions are removed with a razor saw and two new panels, 2mm longer than before, added from 30-thou styrene. Once all is dry the body is assembled about the new underframe and the stanchions and top reinforcing rail/lip added from 40-thou are Microstrip. The wagon represented four-shoe Morton brakes (ABS U24) oller bearing axle boxes. Many had rakes. In either case, proceed as wheelbase mineral.

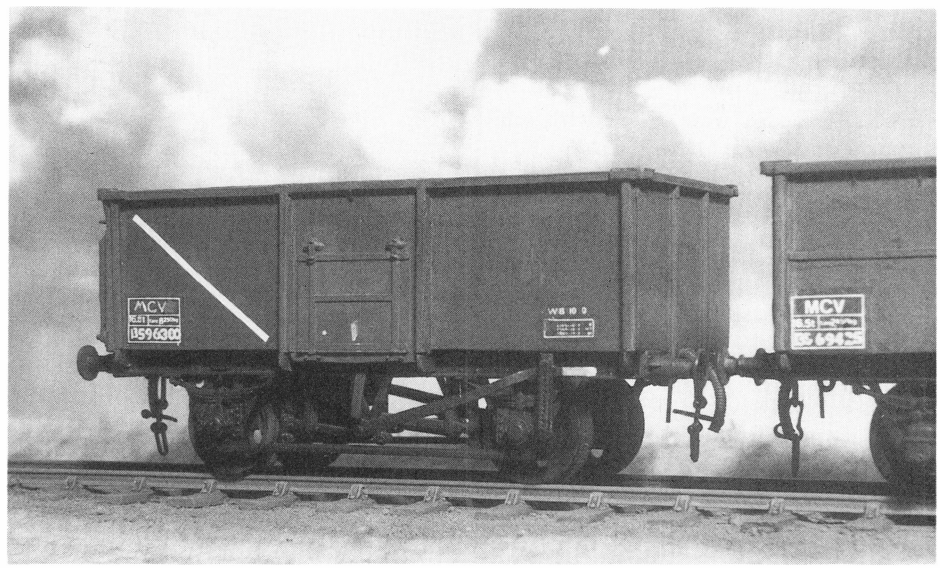



*Diagram 1/194, the 10ft wheelbase conversion. This vehicle has replacement styrene side panels, so that prototypical 'dents' can be more readily represented.*

stages of construction. Handrails were folded up and superglued into drilled holes. Unfortunately, the attachment part of the side handrails are not moulded in. These were represented by drilling an adjacent hole and inserting and gluing in a piece of 20-thou plastic rod. The door hinges, which obviously could not be moulded-in during casting, were added by gluing small lengths of 20-thou plastic rod into position. Label holders were made from a scrap of 10-thou plastic sheet and wire. The protruding part of the lamp-irons were filed to shape from brass sheet and inserted into the pre-filed notches. The remaining part of each lamp-iron comprised a piece of plastic card embossed with the bolt heads and stuck into position. Door handles were slices cut with a piercing saw from a length of 1/8in extruded brass T-section, one length of which has lasted me many years and quite a few coach constructions. I hope it is still available.

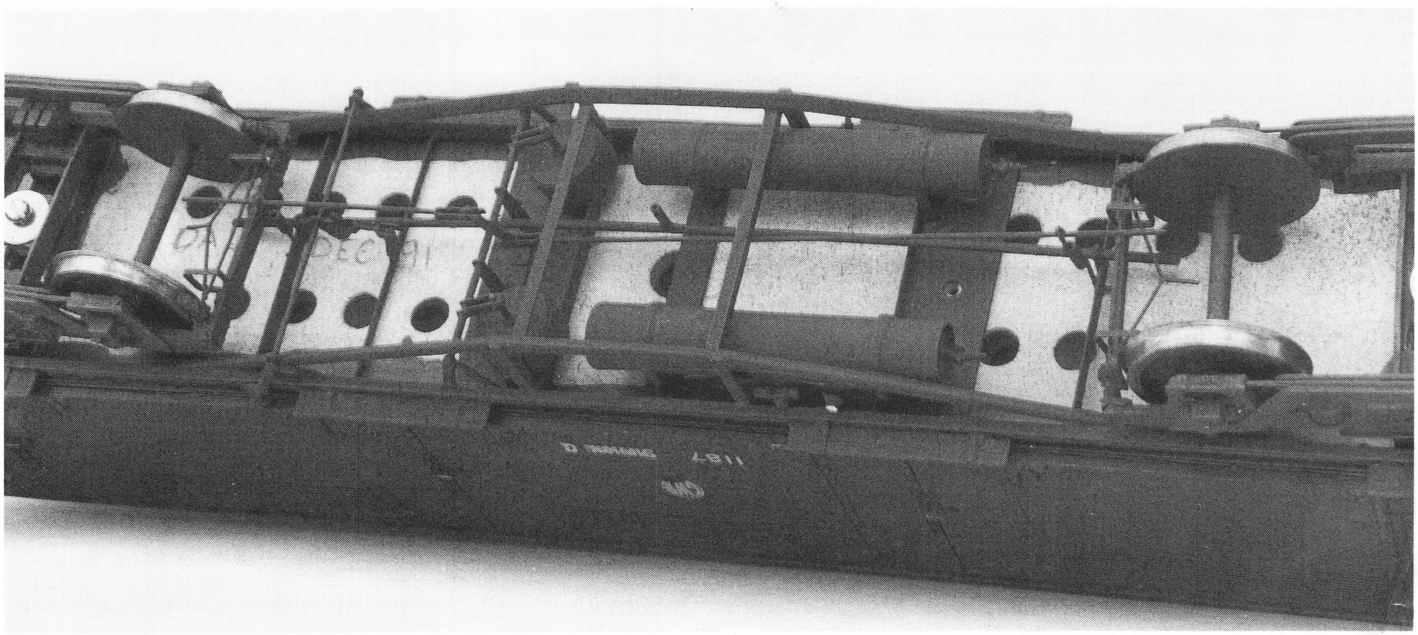
I happened to have a spare pair of DJB scissor-type corridor connections in stock – a real watchmaker's job, these, and very trying on the eyes. I was pleased that quite a few spare rivets were included, but they still pinged off in all directions. The fall-back position here happens to be the common domestic pin, the diameter of which is right, and the heads can be filed down; however, riveting won't work with them and a delicate touch with the soldering iron is required if they are to be used for working scissor action. Having assembled one, I discovered that the housing against the end is not the correct pattern, so new parts were made to replace that bit of the etching. The completed corridor connections were attached to the body using a dog-plate across the rear and a self-tapping screw passing through a clearance hole in the resin and into the plastic box structure. In my case, I actually cut slots in the resin to correspond to the projecting tags at the rear of the corridor connections. This was achieved with judicious use of drill, knife and file but cost me a broken drill and was probably not worth the trouble. Incidentally, a piece of black nylon stocking makes an admirable top cover for the assembly.

There was little difficulty in finding plenty of information on the body details with many photographs and drawings available in the published works. It is a different matter on the underframe details. The two-dimensional drawings available in the Slinn & Clarke book are not very helpful; a better drawing by S. M. Hunter appeared in the *Model Railway News* in October 1952. It is a great pity that there were so few underframe photographs taken showing the details clearly. The model must look right from normal viewing positions but for a running model I cannot see the logic of spending a lot of effort, especially on accurate representation of details that will never be seen when the model is standing on the track. My working models must be robust and I compromised on the detailing in order to make the finished model as strong as possible.

Solebars were cut from brass channel section 5mm x 2.5mm and buffer beams folded up from sheet to match the channel section. The width of the top fold was made to match the distance between the solebars, thus making a solid corner when soldered up. Holes were drilled through these for attaching the chassis to the body. Inevitably, I had to drill new holes later as my first choice of position fouled the bogie wheels. A riveted shim overlay for each buffer beam was made and soldered on. Again, if I had thought ahead properly, I would have cut these to include the bottom footstep which could have been folded over; however, these were successfully soldered into place later using the dodge of cutting a long strip first and trimming to length once attached. Footsteps were filed up from 30-thou brass with tabs on the back; slots for these tags were cut through the solebars using a drill and a sharpened small screwdriver as a chisel, and cleaned up with a fine needle file before the steps were soldered in from the back. I was unable to buy the appropriate size angle for the trussing, so I made use of some 3/32in square section I had. This was filed at an angle on the back, effectively making it appear to be an angle section except when viewed from underneath. The shorter lengths, where this ruse could not be employed, were formed up from over-thick sheet and filed down to give a sharp corner.

I couldn't find any suitable tube from which to turn the gas cylinders, so eventually these were rolled up using brass shim soldered to turned ends. Hardwood was used to turn the vacuum cylinders and these were held in place by soldering the actuating piston to the chassis at one end and a washer at the other; spare Slater's cast gas valves and pressure gauges were utilised. The rest of the details were fabricated from sheet and wire soldered in position. DJB GWR square-shank buffers were used but the springing arrangement was changed as there was insufficient space for the whitemetal bracket to be fitted. Small brass collars were turned up and slotted across the end and fitted to reduced length shanks to replicate the springing method on the Peco/Webster wagon kits.

A pair of Cavalier 9ft wheelbase 'American' bogies were purchased and assembled using low-melt solder in accordance with the instructions. The hangers were deliberately made thicker than scale to minimise the risk of their bending, something that can be disguised somewhat by filing generous edge radii. I originally intended to solder and pin them to the whitemetal to be certain that they would not become detached; in the event, this proved unnecessary as the solder attachment proved to be quite adequate. There were no brake shoes or rigging included in the bogie kit and I deliberated whether to bother. However, as I had incorporated a fair amount of detail in the underframe already, I settled for fitting only the end shoes, the more visible ones. My stores included some whitemetal brake shoes of unknown age and origin which were quite suitable. Thin strips of brass were inserted into saw cuts in the shoes as hangers and soldered; the assemblies were then soldered into the corners of the bogie with some difficulty, although the job was made



Photos: TONY SMITH

easier by removing some of the cast white-metal projections on the inside end face. Etched pull-rods from a Slater's kit were fitted together with safety straps on the ends only.

I used small self-tapping screws to attach the underframe and the bogie mounting plates to the body. Trial drilling holes in a scrap piece of suitably thick Plastikard soon determines the correct size of drill to use; the hole must not be too tight or the screws will bind or permanently deform the plastic. It is helpful to relieve or countersink these holes first. I have employed this method of attachment for 20 years and found it to be totally reliable.

The worst part of the project was the painting – make or break stage! I have seen many indifferent models made to look better as the result of a good paint job – and many a good model spoilt by its finish. The usual problem of paint adhering reliably to brass was considered. I have noticed that with handling, the paint on the prominent details tends to wear fairly quickly, showing the brass colour through, despite care taken with preparation. This time I applied Carr's chemical blacking to the footsteps using a cotton bud; it will be interesting to see how this wears in practice. The buffer heads and screw couplings were similarly treated.

The body and underframe were first sprayed with a car aerosol primer. The body was then airbrushed Railmatch GWR brown, which seemed a better colour than the aerosol Precision Paint I tried to use. I have had reasonable success using aerosol cans in the past, but, perhaps because of their age, they have all played up lately, blocking up or splattering. I persevered with the dirty black aerosol can for the underframe but the paint still took a long time to go off and dried streakily; I took a chance and left it alone on the assumption that the finishing varnish would even out the streaks. Methfix transfers were applied in the style of the late 1930s and the complete model was sprayed with matt varnish. Fortunately, the streaks disappeared and a nice flat finish resulted – not my best paint job but adequate for a working model. I will no doubt be encouraged to apply weathering, but my argument is that within my modelling period, it is quite possible that this vehicle has just been out-shopped.

A fair amount of time was expended on this project but that's something I have plenty of at the moment. I feel that the result is a very nice model, with which I am well pleased. I have long wanted a rake of Siphons but have been put off by the problems of scratchbuilding convincing looking louvres. Hence the reason for my impulse buy. I heard a suggestion that the next cast resin offering will be an outside-framed Siphon G. If it comes to pass, then I will be a willing customer.

P.S. The steam and vacuum pipes were deliberately left off pending a decision on auto-couplings.

**GAUGE O GUILD**
**NORTHERN SPRING CONVENTION '92**
**Saturday 9th May 1992 – 10.00 - 5.00**
**Halifax Leisure Centre, Halifax, West Yorkshire**
(follow signs for Leisure Centre)

This year's Northern Spring Convention is being organised by the Cheshire Group of the Guild.

The Leisure Centre has car parking facilities and light refreshments will be available, with the Convention contained within one hall.

**LAYOUTS**

*Test Track* – North East Cheshire Guild Group.

*Chapel Amble* – new layout by Fred Walton, a recent convert from 4mm scale. Fictitious GW branch line terminus in Devon in the early 30s.

*Waterbury Town* – by Philip Holme. Based on mid-Bedfordshire, close to LNWR and LM main lines, with assumed connections to each.

*Oval Ash* – John Allison of Warley MRC.

*Victoria Wharf* – Sutton Coldfield Railway Society, inspired by John Allen's 'Timesaver' shunting problem.

*Kings Wharf* – Malcolm Strong of Warley MRC, a purely imaginary place situated in part of a large dock area around the turn of the century.

**TRADE:** AGH Miniature Engineering, AK Models, Ambis Engineering Division, Bairstow Models, Andy Beaton, Bee Jay Models, Brian's Kits and Bits, Brumtrams, CCW Model Manufacturing Co., C & L Finescale, Chowbent Castings, Connoisseur Models, Conti Kits, Eileen's Emporium, Paul Fletcher Models, Freightman, Gateneal Limited, Guild Trustee and Executor Services, Haywood Railway, Headstock Publications, Home of 'O' Gauge, Janick Models, Kenard Models, J. King (Model Supplies), L. H. Loveless & Co., MTK, Majestic Models, Marcway (Pointwork) Products, G. Mellor, Mendip Models, Meteor Models, Midland Railway Centre, The Midlander, Model Signal Engineering, Modelex, Modellers Mecca, Modellers World, Oakville Models, Parkside Dundas Limited, Procast 84, Quainton Road Models, RJH Model Railways, Railwood Products, Roundfield Engineering, Rutland Model Assoc. (Cherry, Moore, Kirtley), S & D Models, Sam Engineering, Les Seppings, M. G. Sharp Models, Shedmaster, Slater's Plastikard Ltd., Specialised Products, Tower Models, Tractopak Ltd., Eric Underhill Models, Walsall Model Industries, Westdale Coaches.

**Admission:** £1 to GOG members, £5 non-members, £2 to non members as a concessionary rate to children under 18, students, senior citizens, and UB40 holders.

# MINERAL WAGON VARIETY

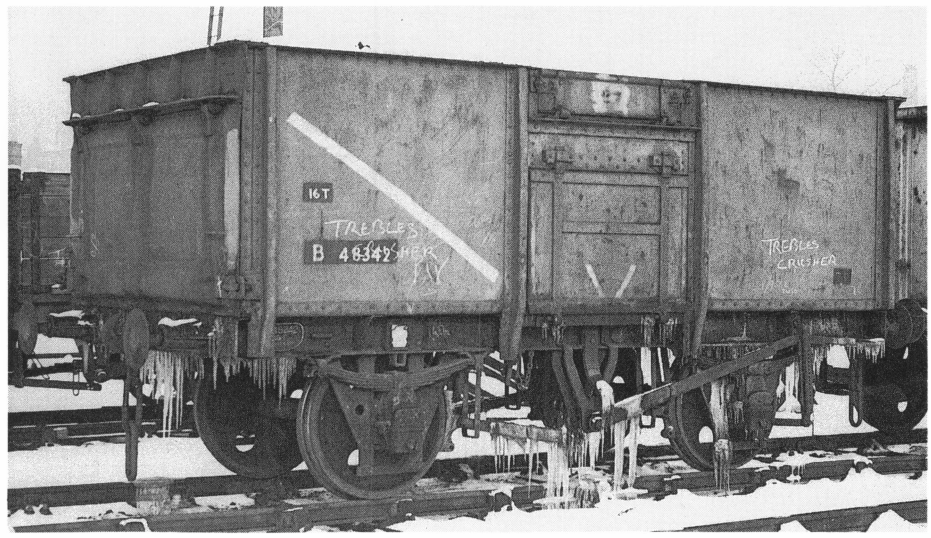
## PART 1 – WELDED 16-TONNERS

**PETER TOTMAN looks at BR-built 16-ton mineral wagons and ways of representing them in 4mm scale, using inexpensive, good-quality plastic kits:**

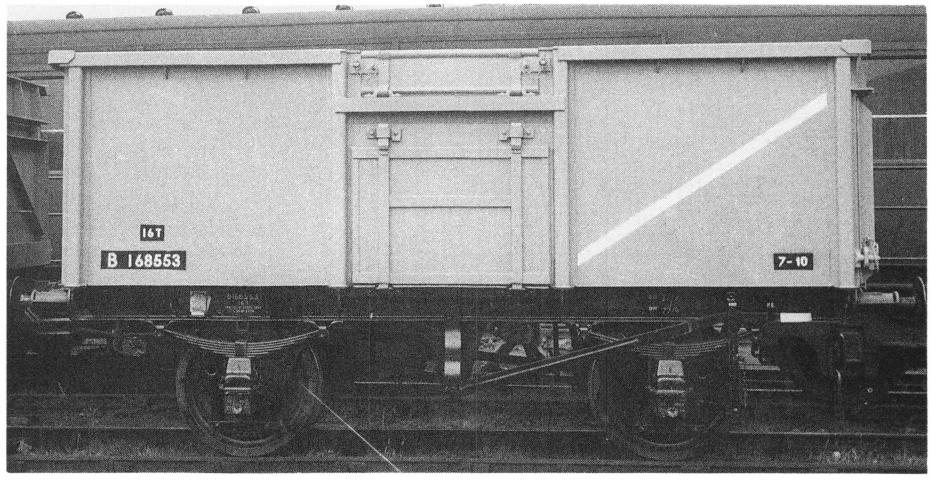
By the early months of 1988 the 16-ton mineral wagon had finally disappeared from revenue traffic, although a few creaked on in departmental use. So the most numerous vehicle type built by BR passed from the railway. In total, British Railways constructed about 239,673 wagons between 1950 and 1959; it may have been more but the process was so frantic that no one is sure of the real number. Paul Bartlett, the author, estimates the rate of production at about 200 per week over the peak seven-year period of construction – a huge number by any yardstick. Before I dive straight into modelling details I feel I must give some background to make some sense of the various mineral diagrams.

The origins of the 16-ton design lie with a 15-ton steel wagon built before World War II by Charles Roberts & Butterly Co, as a more economic alternative to the wooden 12-tonner. From these grew two designs – a welded type ordered by the LMSR to Diagram 2109 (LM) constructed through 1946/7, and a riveted type ordered by the LNER to Diagram 188 (NE), built between 1945 and 46. These designs were perpetuated by the MoT as Diagrams 1/102 and 1/103 respectively. Both wagon types had double brakes, bottom, side and end doors but no top doors. In this article I concentrate on the BR building programme. The history of these early vehicles has been covered by several authorities whose details are given in the bibliography. These wagons ran side-by-side with the BR builds until the 1960s and perhaps the editor will allow me to expand upon their types at a later date. To illustrate these diagrams I have included photographs of some models although, strictly, they are outside the scope of the article. Modification was made by the MoT to the design during 1947/8 and top-flap doors were added and new Diagrams 1/104 and 1/105 issued.

After nationalisation, British Railways ordered another 1,350 wagons to Diagram 1/104. These had top and bottom doors and double brakes. Diagram 1/106 vehicles were essentially similar to Diagram 1/104, but the length and width increased by 1/16in and 1/8in and the top door by 1/8in. A total of 2,800 were built, most double-braked, but some

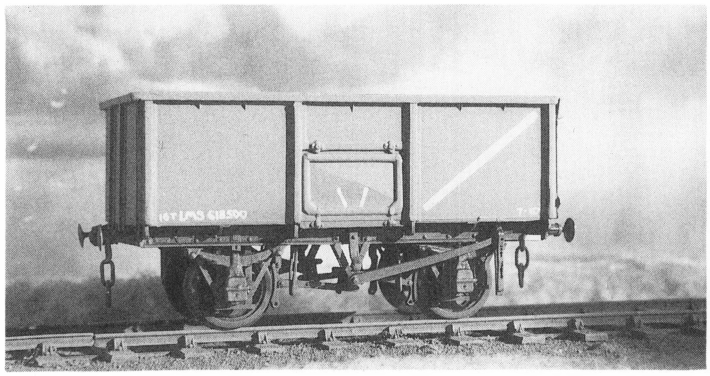


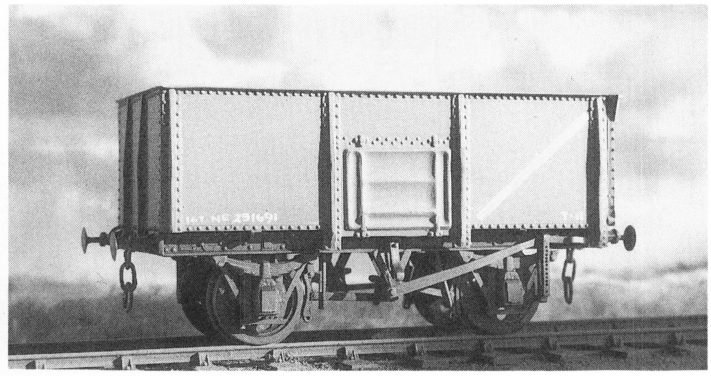

*An ice-bound pre-BR design Diag. 1/105, seen here at Slateford in February 1963.*




*An almost pristine BR-build Diag. 1/108 at Fort William in 1954. Note the reinforced brake lever.*

*Diag. 1/117 with clasp brakes, pictured here at Muirkirk in 1959.* Photos: DON ROWLAND





Left: *One of the originals – the LMS 16-ton mineral, produced from a Cambrian kit.* Right: *The LNE type, also from a Cambrian kit. This model, like the LM version, has replacement ABS brakegear, compensation and Slater's buffer rams.*

Morton-braked (implying that the bottom doors were out of use or even not fitted). Diagrams 1/108 and 1/109 were issued to cover the bulk of the mineral wagon programme, the wagons being identical to Diagrams 1/104 and 1/105 but lacking bottom doors, hence the new diagrams. Early lots of both types had double brakes but the vast majority had Morton.

Diagram 1/111 were identical to Diagram 1/106 but lacked bottom doors. Those to 1/114 were identical in body size to Diagram 1/111 but were supposed to be vacuum braked; only a third of the lot were so equipped, the rest being built unfitted. British Railways experimented with aluminium bodies at one time; they built 100 to Diagram 1/116 but no more were ever constructed. The final diagram issued was 1/117, for mineral wagons essentially a 1/111 with the sides increased by 1/16in to squeeze in an extra cubic foot of coal.

The table here cobbles together the basic data, and, I hope, makes some sense of the mineral wagon saga.

| *Diagram* | *Built* | *Total number* | *Construction* | *Top & bottom extra doors* | *Double brakes* | *Morton brakes* | *Clasp brakes* |
|---|---|---|---|---|---|---|---|
| 1/104 | 1950 | 1,350 | Weld | t & b | 1,350 | | |
| 1/106 | 1950-51 | 2,800 | Weld | t & b | 2,400 | 400 | |
| 1/108 | 1951-59 | 197,459 | Weld | t | 2,950 | 187,674 | 6,835 |
| 1/109 | 1950-59 | 25,014 | Rivet | t | 500 | 23,809 | 705 |
| 1/111 | 1950-54 | 4,400 | Weld | t | 1,500 | 2,900 | |
| 1/114 | 1951 | 300 | Weld | t | | 200 | 1,001 |
| 1/116 | 1954 | 100 | All rivet | t | | 100 | |
| 1/117 | 1955-58 | 8,250 | Weld | t | | 7,251 | 999 |

## MODELLING

The majority of the models I have built have been based around the Diagram 1/108 produced by Parkside Dundas, catalogue PC21. The quality of the mouldings is superb and in most areas dimensionally accurate. The kits are usually sold com-

Fig. 1. Diag. 1/108

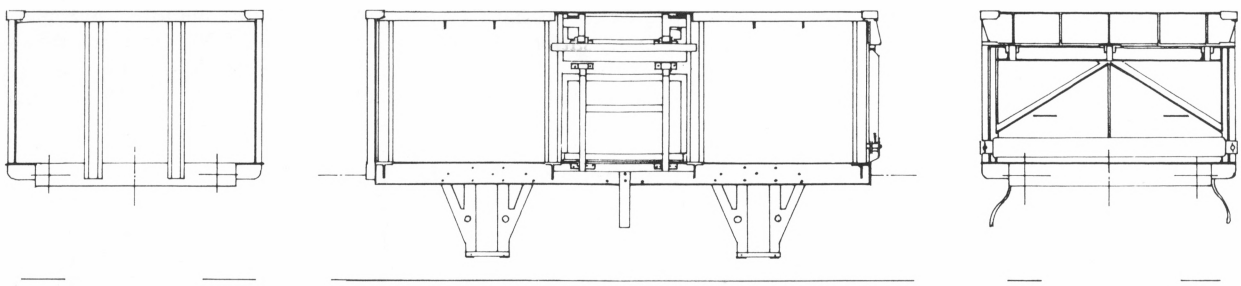
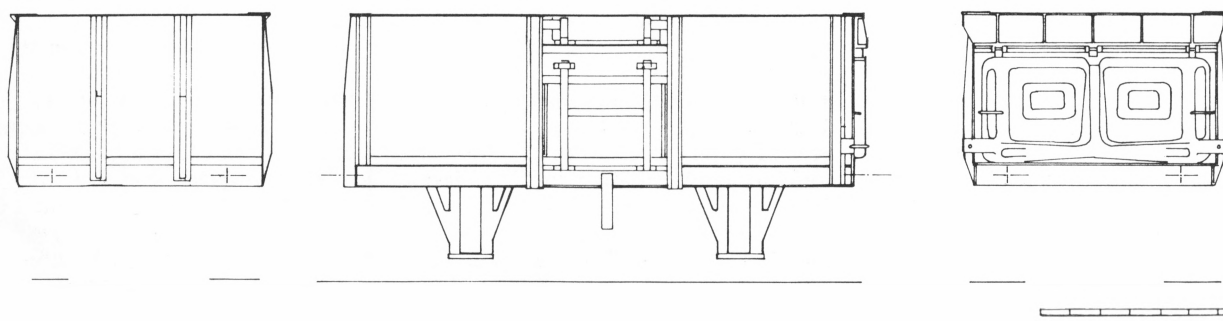


Fig. 2. Diag. 1/109

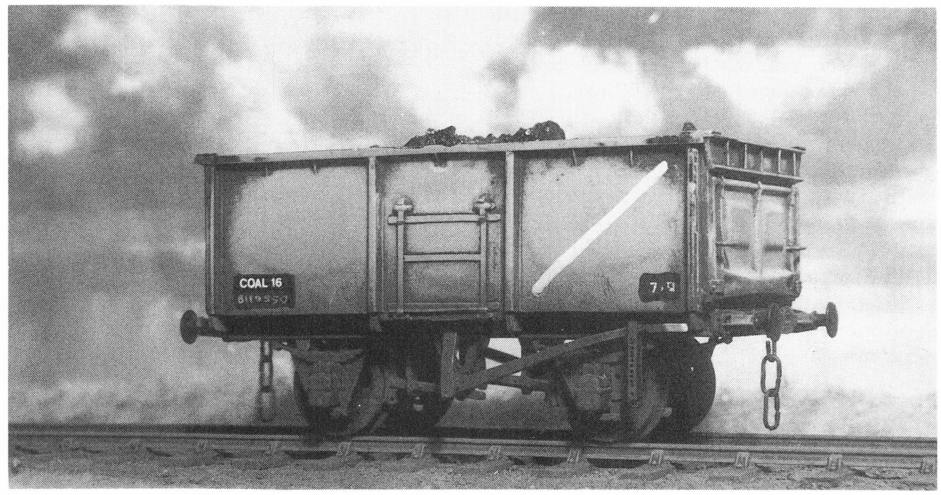


plete with Romford OO wheelsets, but Kean-Maygib wheels in OO, EM and 18.83mm gauge can be had by exchange (if kits are bought direct from Parkside Dundas by mail, the wheel type can be specified with the order). I have also found this supplier very obliging in the supply of extras and spares. Dapol also produce the old Airfix mineral wagon kit and a good review by Bob How appeared in MRJ No. 47; the kit is a lot older than the Parkside one and a deal chunkier, but a lovely starting point all the same.

No matter what modifications or butchery one wishes to perpetrate on the bodies, a few improvements are common to all conversions in enhancing the look of the models. I feel it is always in the area of the brakes that plastic wagon kits fall down. I don't think I have come across one manufacturer who has produced convincing moulded plastic brakes. One comes across exquisite underframes, perfect axleboxes and springs, solebars bristling with crisp rivets and bolt heads, then blobby bits for push rods and shoes. And brake levers . . . I hardly like to mention brake levers.

Help is at hand these days. My favourite solution has been around for a number of years in the shape of ABS 9ft Morton two-shoe brakes (U04) – lovely, lovely whitemetal castings, looking superb straight from the packet. Cleaned up, they're even better, and if the cast safety straps are replaced with strip, just about perfect. The brake levers do show the limitations of whitemetal, but by careful filing to reduce the apparent thickness on the top edge, it is hard to tell their origins. The pin-down guard can be carefully drilled, No. 80 or so, and the slot opened up with a craft knife and cleaned up with a needle file to produce quite impressive results. Do watch your fingers though – those tiny drills seem to burst through the castings in a sudden rush and can penetrate the old fingertips to quite a depth; the same is true of the craft knife and it can become a painful process if one is batch building. By the by, I use a Stanley model 10-595 retractable for this job. For years I'd been a Swann-Morton scalpel chap, but in some applications the extra strength of the Stanley blades is advantageous while retaining the precision and sharpness of a scalpel.

For some applications the cast lever will not do but it is quite easy to file up a lever from 2mm wide nickel or brass strip to suit, or Perseverance (and others) make an etched set of Morton brake levers and guards. John Flack can supply brass or nickel strip 0.33mm thick – almost exactly the scale inch of the prototype lever. To make one's own brakes is not too difficult in any case. Chris Crofts gives a vivid description of the whole shooting match in his memorable series in MRJ Nos. 12-15.




*A Diagram 1/102 mineral running in later condition, with a replacement pressed end-door, fabricated side-door and welded-up bottom doors. It has 1960s brandings.*

Parkside's V-hangers are nicely moulded and I tend to utilise them where possible, but again, chamfer the edge to reduce the apparent thickness. If you wish to replace the Vs, D & S Models can supply etched replacements – catalogue 500-VE-1.

The other area where I find plastic kits weak is that of buffers. Plastic does not make for good buffer heads. As a matter of course I replace these, as a whole unit using ABS castings (U03) or just the rams using Slater's product No. 4070. MJT 2300 does the job nicely, too.

Far be it from me to start up the old compensation argument, but in my chosen 4mm gauge of EM, I have found no advantage in compensation up to a 9ft wheelbase, 10ft is marginal and at 12ft and upwards it is a positive advantage. I get my compensation units from the EM Gauge Society, but they are available from a number of sources (MJT for example). On the subject of suppliers, most of my bits and pieces come from Mainly Trains at Watchet; Dave Cleal seems to carry a vast stock of just the right things and operates a mail-order service par excellence, much lauded in these pages – I can thoroughly recommend it.

## WELDED WAGONS

It always struck me as strange that British Railways issued so many diagrams for essentially the same wagon – there was normally more variation within a diagram than between diagrams! Welded wagons were covered by Diagrams 1/104, 106, 108, 111, 114 and 117. Diagrams 1/104 and 1/106 both had bottom doors necessitating the use of double or either-side independent brakes. To reproduce the system, two V-hangers are needed on each side to support the brakes. For the inner one I used the existing plastic offering suitably chamfered to reduce the apparent thickness. The outer one was supplied by the EMGS as part of their old W-iron fret but D & S make the required item in the form of DS100-V, which comes complete with etched washers to thicken the boss. Again, I would also draw your attention to Chris Crofts' articles if you wish to fabricate your own items.

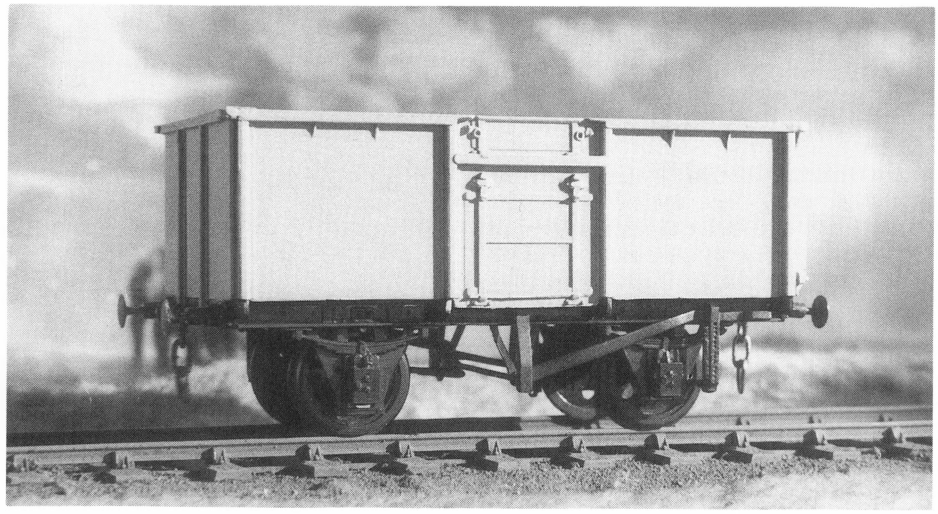
By far the biggest chunk of wagon building was to Diagram 1/108, over 197,000 in eight years. They covered the whole range of brake types, buffer types, end door types and couplings. Referring to the table, about 3,000 had double brakes, 187,000 Morton two-shoe and some 7,000 with vacuum clasp brakes. In the 1970s many unfitted wagons were re-equipped with Morton four-shoe vacuum brakes as a cheap alternative to clasp VB.

Diving straight into the underframe, I replace the brakegear with ABS U04. The two-shoe brakes fit as in *Fig. 3*. The standard way of fitting was with the brakes and cam lever on the side with the end door on the left, but this was not the case in later years. If you just want to stick with unfitted wagons, a bit of variety can be introduced in the form of rod reinforced brake levers. At first, I produced these by soldering 0.3mm wire to Perseverance levers, then filing to shape. Later I found I could stick a sliver of Microstrip to a painted ABS cast lever using Mek-Pak liquid styrene cement – and nothing has fallen off yet. Examples noted with reinforced levers include B561490, B210895 and B569425.

One addition that makes just that little bit of difference to the look of a model is to add the bracket between the bottom of the brake guard and the W-iron. I make mine out of some 8-thou tin sheet obtained from K & S metal sections (in most model shops), and stuck in place with Superglue or Uhu; a touch fiddly, but well worth the effort – I always manage to drop the darn things but keep telling myself that this is a hobby as I scrabble on the carpet after them.

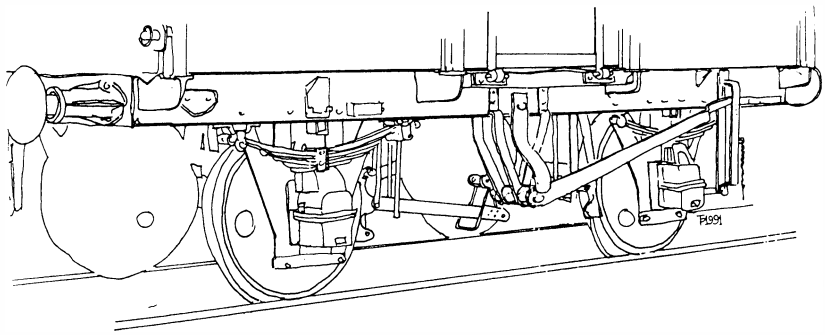
In 1951 an experimental batch of wagons were outshopped with vacuum brakes for brake trials (1/114). As a result BR placed orders for many lots with eight-shoe clasp brakes. Unfortunately, these wagons soon ran into trouble on coal hoists and at power stations where wagon handling machinery tended to rip all the bits off the wagons, quite apart from the grumblings of the shunters who had the extra chore of all those vacuum pipes to couple. The programme was halted abruptly, resulting in wagons being outshopped unfitted but with clasp brakes, and mixed lots of fitted and non-fitted wagons. In 1966 another decision was taken to convert 5,000 wagons to Morton four-shoe vacuum. Their numbers ran in the series B562200-B583299. ABS provide four-shoe brake capacity in the shape of pack U08. They benefit from replacement safety loops and thinned levers but still look good straight from the bag. Vacuum braked minerals had tie-bars between the W-irons to resist the greater brake forces; in some cases they were L-section and others were plain flat strip. In any case, I remove the existing moulded tie bars as they bear little resemblance to either type. Replacement material is available from John Flack in the form of 1mm strip and L-section brass. These can be gently filed down to a scale depth of about 0.7mm.

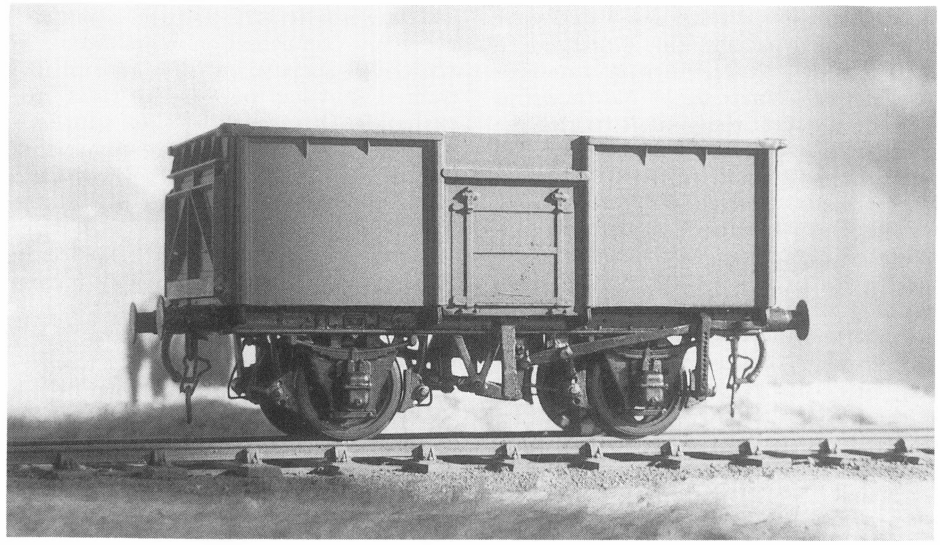
Eight-shoe clasp brakes were fitted to nine lots of Diagram 1/108. They comprised the wagons caught in the 'vacuum brake – don't vacuum brake' fracas, and in many cases ran unfitted, minus vacuum cylinders but with all the other bits intact. The features of these wagons are not quite so straightforward to reproduce, but I hope the diagrams help to make all clear or at least less murky! Suitable brake shoes are available in pack F117 from ABS, as are the brake cylinders (from the vacuum brake sets – not independently, unfortunately). D & S Models produce a set of very nicely etched brake yokes (100-BG-1), or they can be fabricated from rod and strip without too much difficulty. The D & S yokes are not quite the right shape, but in the dark space between the wheels the differences are not apparent.



*The 'standard' BR Diagram 1/108 as built – the design most people are familiar with. The model features plate axle boxes, which will be described when we come to look at repairs and rebuilds.*

Fig. 3. Detail showing double brake





*One of the Diagram 1/108 wagons converted to clasp-brake. The vehicle carries LM/LNE self-contained buffers and has had the top flap door removed and plated over (about which more anon).*

The levers either have to be filed up from 2mm strip or craftily shaped from ABS levers, if you can live with the slight lack of fullness about the fulcrum. It does mean that you do not have to worry about making the brake guard, a finger-singeing exercise if every there was one. The third course of action is to fabricate the levers and graft them on to an ABS brake guard. The V-hanger supporting the non-existent vacuum cylinders and the cross shaft are quite prominent on non-fitted examples. They can be included as etched items from D & S (500-VE-1) or a very neat cast V-hanger manufactured by Kenline and available in pack reference No. 26.

Having dealt with the underframe, next come the buffer beams. These wagons were turned out with either Oleo buffers or something that is (or if not, looks very much like) an LNE/LMS self-contained buffer. ABS make these (pack F723) and MJT make Oleo buffers (pack 2350). The ones I used came, many years ago, from the Southern Railways Group, but I have not seen them advertised for a while. With the longer reach buffers of fitted stock, the coupling hook was packed out from the buffer beam on a metal bracket arrangement easily fabricated from brass strip. Please don't try to find this feature on my model – I forgot about it! The situation has been rectified in a hasty retro-fit. Red faces all round.

Vacuum brakes are not much use without brake pipes. These were made from 5-amp fuse wire wound onto a 22 SWG core, the lot soldered up solid. I have had good results by soldering Kenline underslung pipes (pack 6U) onto a wire spigot. The Kenline pipes are lovely but sprout from the beam rather than worming up from the depths as the real thing. MJT make underslung pipes (pack 2951) as well. Adding the vac pipe retaining bracket from Microstrip makes a nice finishing touch.

A few wagons were fitted with self-adjusting brakes, but as yet I have little idea as to the arrangement of components. Is there anybody out there who does?

The last variant on the welded body design was the diagram 1/194, a 16-ton wagon with a 10ft wheelbase using redundant 'palbrick' underframes with a motley collection of RCH, BR and LMS clasp vacuum brakes. A total of 394 conversions were made, using the number series B596000-B596393. The model was constructed using a Parkside Dundas 10ft wheelbase underframe kit (PA 09) and Parkside body parts. In fact Parkside kindly supplied me direct with the chassis and body parts as a package, so many thanks to them. The first move is to remove all the top door detail with a ¼in

Fig. 4. Diag. 1/108 Clasp brake detail

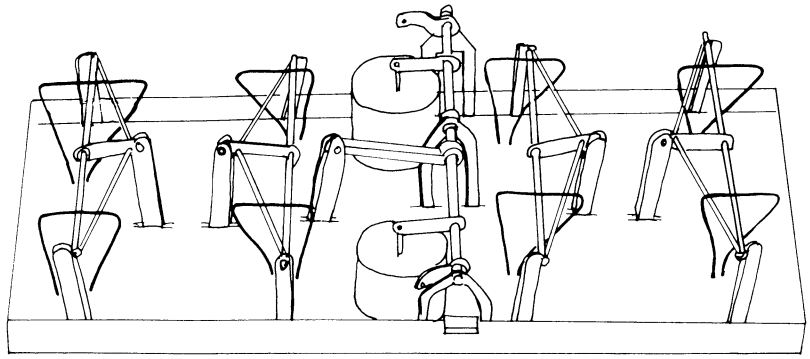
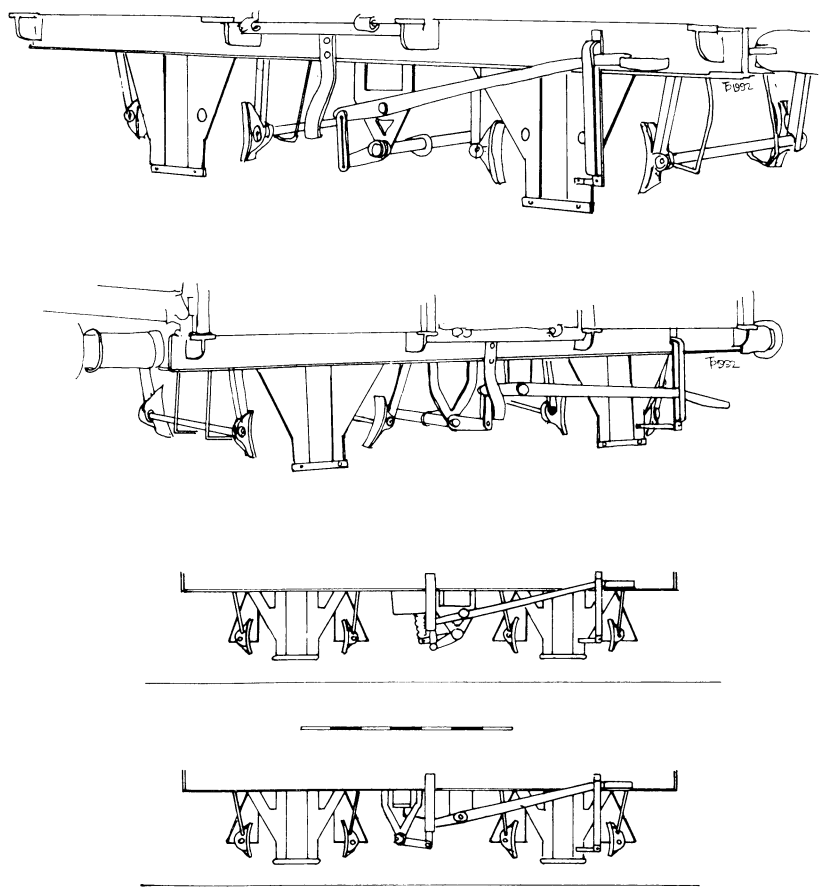
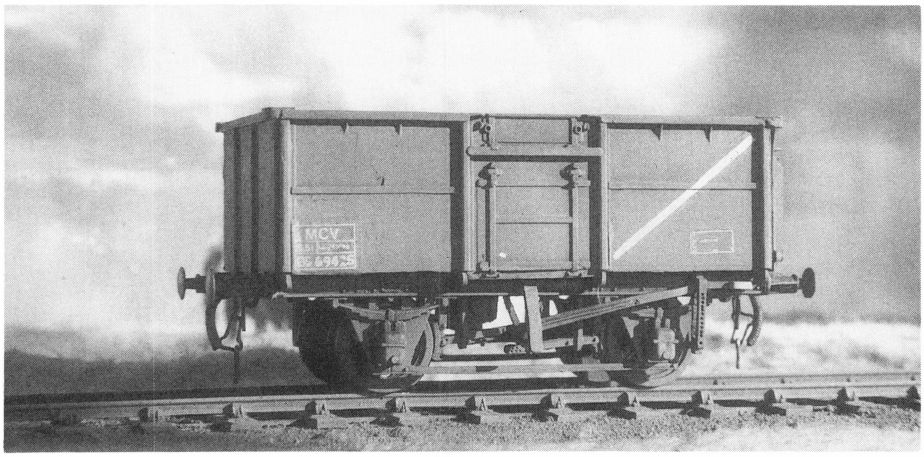


Fig. 5. Diag. 1/108 Clasp brake detail





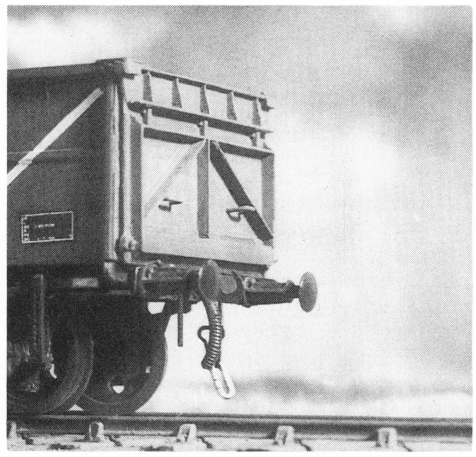
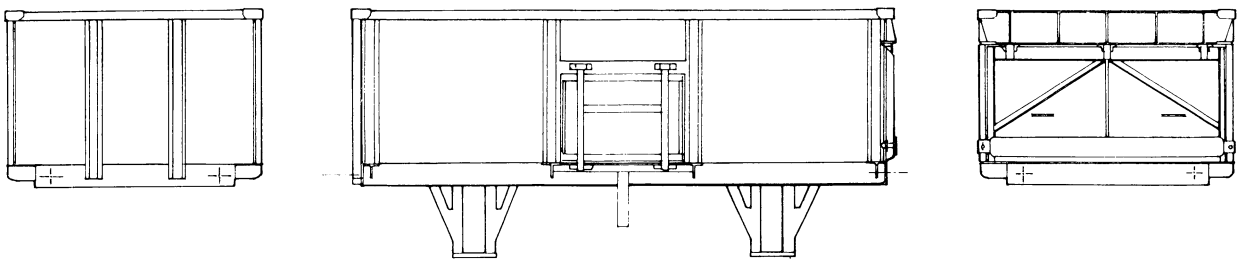


*Diagram 1/108 converted to Morton four-shoe vacuum brake. It retains the top flap door but the shoes are re-plated and the join covered with a fillet plate. Note the L-section tie-bar and the reinforcement rod on the brake lever.*

Fig. 6. Diag. 1/194, 10ft wheelbase



chisel, the best instrument I have ever come across for plastic kit work – a tool capable of great precision in tight places. Once all is cleaned up, the body parts either side of the drop door stanchions are removed with a razor saw and two new panels, 2mm longer than before, added from 30-thou styrene. Once all is dry the body is assembled about the new underframe and the stanchions and top reinforcing rail/lip added from 40-thou square Microstrip. The wagon represented has four-shoe Morton brakes (ABS U24) and roller bearing axle boxes. Many had clasp brakes. In either case, proceed as for a 9ft wheelbase mineral.

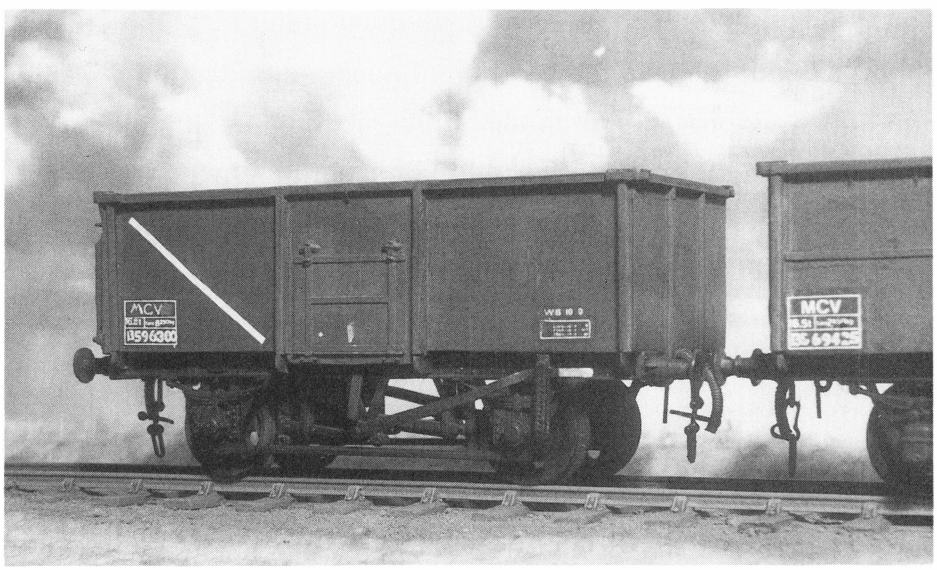



*Diagram 1/194, the 10ft wheelbase conversion. This vehicle has replacement styrene side panels, so that prototypical 'dents' can be more readily represented.*

*To be continued*

**What-ho MRJ!**

"Jeeves" I said, sucking down the first refreshing cup of the steaming and fragrant, "What sort of day is it?"

"Extremely clement sir" replied the faithful fellow. "If you will excuse me, sir, the new edition of the *Model Railway Journal* arrived by the first post this morning."

"Ah! Bung it over, Jeeves, there's a good chap – I'm all eagerness" I said, and in a trice I was leafing through its erudite pages.

"Some models these, what Jeeves?"

"Indeed sir. I believe the models in that particular periodical give uniform satisfaction."

"Tut-tut, what's this? Two layout features, but not a single trackplan? How are the old grey cells supposed to make sense of it all? I bet it's beyond even you, eh Jeeves? Even though your head does stick out at the back."

"Yes sir, I find it somewhat difficult fully to appreciate a model railway without the benefit of a layout plan, if I may use Mr. Rice's term."

Well, if someone like Jeeves – who feeds almost exclusively on fish to develop the brain – has difficulty, what hope your humble scribe?

"Never happened in the good old days, eh Jeeves? One deplores this modern laxity."

"It is a most disturbing trend sir. I venture to suggest it would never have been tolerated in the days of the late Mr. Henry Greenly."

"You speak sooth, Jeeves. And whatever became of the bally stock list? Answer me that."

"Ichabod, sir."

"Quite. Any more tea in that pot?"

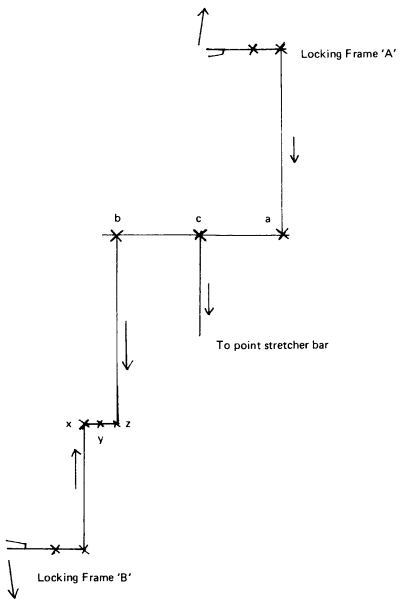
*Paul Killick*
*St. Martin's*
*Guernsey*

*P. G. Wodehouse himself could not have complained more effectively. We try wherever possible to use track plans, but time, space and availability sometimes combine to preclude inclusion. In this case our artists, Gussie Fink-Nottle and Oofy Prosser, were otherwise engaged at the Drones Club. (Editor)*

**Levers, Pivots and Points**

The enclosed sketch may solve Philip Hall's lever frame problems (MRJ No. 53). No complicated components are required and the whole outfit can easily be constructed in the home workshop; indeed for anyone contemplating mechanically-worked points or signals, the material will be to hand. As my sketch shows, neither of the two point levers are directly connected to the point stretcher bar, but instead to the lever 'b c a'. This lever 'floats' between the two rodding runs on the pivots 'a' and 'b'. Midway between is the third pivot 'c', and it is to this that the point stretcher bar is connected.

When lever 'A' is pulled, the floating lever pivots around point 'b' and travels downwards; obviously the connection 'c' must move in the same direction, and in doing so reverses the point switches. Conversely, if lever 'B' is worked, the floating lever now pivots around point 'a', and once more the points are reversed. I think it goes without saying that at no time must levers 'A' and 'B' both be reversed together.




The floating lever has a ratio of 1:1, therefore the travel of the point stretcher is exactly half that of the two main rodding runs. As far as is practical, the stroke of the rodding at pivots 'b' and 'a' should be equal. To follow convention and allow both levers 'A' and 'B' to stand normal with the points in that position, it will be necessary to reverse the direction of one of the rodding runs. For the sake of illustration I've shown this in rodding run 'B'. At some convenient point, between the tail of lever 'B' and pivot 'b' of the floating lever, is placed the straight lever 'x y z'. This is mounted on a fixed pivot at point 'y'. The two ends of the respective rodding runs are pivoted to points 'x' and 'z'.

Signals can, of course, also be worked by this method, although if carpet thread or similar is used it may not be necessary. Instead both threads can be connected to the operating mechanism.

*Mick Nicholson*
*Hull*

**Safer, Healthier Painting**

In his article on complex coach liveries (MRJ No. 52), Jol Wilkinson commented on the problems and hazards of using aerosols and airbrushes in confined spaces. His option of using them out of doors or in the garage does not really appeal at this time of year, so the answer may be a spray booth with extraction system. Making one is a change from finescale modelling as it is hardly a precision job.

The spray booth shown here comprises an open-fronted box 350mm deep by 520mm wide and 260mm high. This allows a 4mm scale coach to fit lengthways and room to manoeuvre the airbrush, but it can be any size you want. A lip along the bottom edge retains spilt liquids and reduces the throat area. In the middle of the rear wall is a 100mm round hole with a wire guard. On the outside, a 4in axial fan in a separate box is bolted on (making sure it is blowing the right way!). The output side of the fan box has a circular flange which fits a vent pipe from a tumble drier, the free end of which is hung out of the window. Small refinements are the provision of a carrying handle on top and polythene U-strip covering exposed edges.

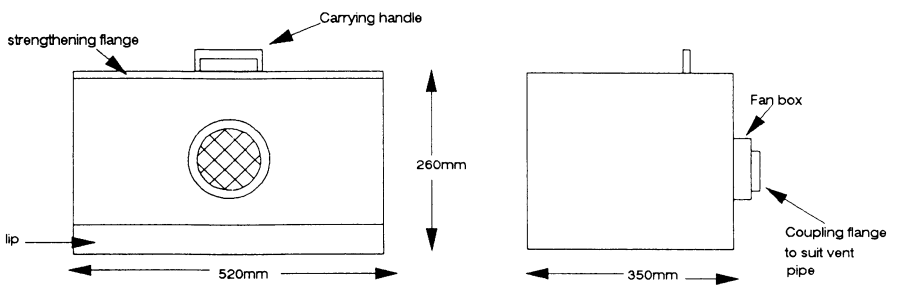
Mine is made out of aluminium because that was the material available, but plywood, sheet steel or perspex would do just as well. Axial fans are used for forced ventilation of electronic equipment cabinets so you may be able to recover one from a scrapped computer installation, but check the voltage as they are not necessarily 240V AC. Especially do NOT use a DC fan, as brush gear and potentially inflammable atmospheres can be explosive. If you do not feel up to doing large-scale metal bashing, a local sheet metal works may be able to supply the material and do the sheet work for a reasonable price.

The airflow pattern is fairly even as long as the airbrush is kept towards the front of the unit. I have not experimented with baffles, plenum chambers or filters. Paint does tend to build up on the fan blades but as it is effectively dry by then, it forms a dust which can be brushed off at intervals – but make sure the power is off when you do it!

Finally, a few other safety points: fit a fan guard to keep out fingers and other objects; all metalwork must be electrically earthed; if you are not sure about the wiring, then get a qualified electrician to do it; it is still sensible to wear a dust mask when spraying.

*Richard Belson*
*Nailsea*
*Bristol*

RICHARD BELSON'S SPRAY BOOTH



### Model Your Way into Dentistry!

Your editorial (MRJ No. 52) about the reticence of modellers to admit their hobby in *curriculum vitae* caused me to reflect on why this should be a problem. The whole thing about CVs is that they should show the individual to have a well-rounded set of interests – what better than model railways? One could record an interest in industrial archaeology, social history, photography and rambling (gathering prototype information), electronics, miniature engineering (notice the careful avoidance of the word model), carpentry/cabinet making, landscape painting . . . one could go on. Look how long your CV is beginning to look now; why use two words when twenty will do! If it really counted you could even list as a publication the fact that you had a letter published in the *Mod Rly J*, but that might give the game away.

I am, in fact, most fortunate that my profession regards manual dexterity as something of an advantage (so do the patients). This being so, I am convinced that one of my early scratch-built N gauge locomotives got me a place at university. The engineering skills that I have learnt have also been invaluable for making bits of microscopes; just as people use their skills from work in their hobby, so also the converse is true. However, perhaps the greatest asset which follows from an interest in model railways is the diverse contacts and friendships that are made – a model railway Mafia, if you like.

*Tim Watson*
*St. Albans*
*Hertfordshire*

I was very interested in your editorial in MRJ No. 52; I always put my interest in model railways on job application forms and it has not held back my career. I, however, work in libraries and leisure services. There are now many more career opportunities in the leisure industry and a hobby like model railways is a positive asset. The point I am making is that in some careers, the hobby can be used to our advantage. This is also true in schools. My son has just taken GCSEs and found his interest in model railways and railway history has been a positive asset in physics, maths and history.

Incidentally, as Andrew did so well he was awarded a school prize; for this he chose *Light Railway Layout Designs* by Iain Rice. When the great day arrived for the presentation – by the Chairman of the Headmasters' Conference, no less – Andrew noted with trepidation that the lad who had won the physics prize had got a physics book, the maths winner had a maths book and here was he with an Iain Rice special! So you can imagine our feelings in the audience, watching Andrew receive the prize on stage, when the Chairman spoke longer to our son than anyone else. The reason? As he explained to Andrew, he's a great Iain Rice fan himself and thought it a great prize to choose!

I hope Iain Rice will be glad to know this and that at least one of his books sits proudly on the shelf with a 'School Prize' plate inside. Perhaps they'll study his books for GCSE courses next!

*Ian Stringer*
*(Sec., Dewsbury MRC)*
*Wakefield*
*West Yorks*

Your editorial about us closet modellers set me thinking, for the practice here in the Toronto area of Ontario is much the same as you have identified for the UK. But there are some interesting side aspects which cause some smiles among us.

I happen to fit the profile almost exactly. I am a senior systems manager in a large Canadian bank, always having carefully avoided stating 'model railways' as an interest on my resumé (not CVs here). However, as you know, I exhibit a lot on the circuit here in Southern Ontario and Western New York, and it is always amusing to see the startled looks on certain faces in the crowds when they realise that you have caught them surreptitiously slinking through the crowd, and they know you are looking at another manager, or a General Manager, or even, heaven forbid, a Vice President. To make matters worse, some of them are most embarrassed when you take them aside in a corridor to discuss some aspect of a show.

I think your perception of practices in the US has been somewhat modified by 3,000 miles of ocean. Many career-minded males would have to exude enormous self-confidence to let it get out that they 'play trains' in their spare time. Just because some (fully-employed) recruitment specialist advocates that we openly admit to this vice doesn't mean we should always throw caution to the wind!

*Mike Watts*
*Ajax, Ontario,*
*Canada*

### Crisp Window Frames

Regarding Mr. de Courtais's article on building the Wantage warehouse (MRJ No. 52), he gives his method of producing windows by the much-used method of scoring clear acetate and flooding the score lines with paint to create glazing bars. My method of creating window frames is to first cut the glazing material oversize by about 3mm, then apply self-adhesive gummed paper (the type sold in stationers as gummed white labels is ideal); draw on the window frame and then, with a sharp craft knife, cut and peel away the unwanted parts that cover the glazing, leaving crisp frames and bars. Then glue behind the window aperture. Two or three layers can be used to create more depth, especially for sash windows (see sketch opposite).

*A. A. Freestone*
*West Knighton*
*Leicester*

### Brush News From a Pictorialist

Nick de Courtais, in his article on the Wantage warehouse (MRJ No. 52), makes a plea for authors to quote sources of arcane tools and materials – 'hear, hear' say I. He mentions Handover sable brushes as quite the best available and, lamenting the loss of his previous source, invokes the knowledge of readers. Happy to oblige.

By way of earning a crust, and to fill those odd hours when I'm not either pretending to devour 'culture' or building model railways (scoff if you will, sceptics!), I am a signwriter and pictorialist. Consequently I am no stranger to the products of A. S. Handover (as Nick could have ascertained by referring to my letter on the subject in MRJ No. 14, page 119). Handover sable writers are to the sign trade what Mitchell kits are to little trains. I get mine from a local supplier, but for those living elsewhere, a call or letter to the company's HQ may prove fruitful. They are at: Angel Yard, Highgate High Street, London N6 5JU (081 340 0665).

One point, though; these brushes aren't cheap. As I said in my earlier letter, you can get sable chisel writers for rather less, and to be blunt, I consider Handovers to be too good for our average needs. Still, this being a hobby where the pursuit of the ultimate is fast becoming the only acceptable credo . . .

Might I pick up Nick on another point? He describes 'scumbling' as building up paint 'too thickly'. Signwriters, decorative painters and even the Short Oxford would disagree, I fear. Scumbling is the technique of overlaying successive layers of paint, be they thick or thin, for a particular purpose. In paintings, it has the effect of softening a picture (rather like our weathering) but the most common use of scumbling is to imitate natural wood finish, by 'dragging' or scratching a wet top coat to partially reveal the colour beneath in a mock grain configuration. In fact, the specialist product for this is called Ratcliff's Oil Scumble – one of the few products I use at work for which I have discovered absolutely *no* modelling application!

*Andy Farquarson*
*Braunston*
*Northants*

### The Final A1 Conversion

I read with great interest Steve Barnfield's article (MRJ No. 52) on building LNER Class A1 *Flying Fox* in 4mm/EM using a DJH kit. There is, however, one error in the prototype notes. Steve says the final A1 (by then A10) conversion to A3 was No. 2546 *Donovan* in January 1948. Not so. This distinction, if that is the correct word, was carried by No. 68 (previously No. 2567) *Sir Visto*, whose conversion to A3 took place in December 1948. This is made clear in RCTS *Locomotives of the LNER* Part 2A, p. 29, and in the summary at the end of the book. There is also a photo of No. 68 on page 9 of H. C. Casserley's *LNER Locomotives* (Bradford Barton) taken at Edinburgh Waverley in grubby post-war apple green, but with surprisingly clear Gill Sans LNER letters and numerals. Even after receiving the A3 boiler, No. 68 seems to have remained in LNER green until October 1950 when it was repainted in the short-lived BR blue livery, before receiving its eventual BR green livery in August 1952. I hope this will not be construed as nit-picking because otherwise I felt Steve's article was excellently written.

*J. A. Evans*
*Loughborough*
*Leicestershire*

### Wonderful Joints

I very much enjoyed Andrew Lambert's excellent article in MRJ No. 51 on upgrading plastic wagon kits. The step-by-step series of photographs was an ideal format in which to set out a straightforward formula for future reference.

May I offer one small variation? I am never entirely convinced about the joints made by glues of almost any kind between Plastikard and brass; perhaps it is my technique, but, sooner or later, they always seem to part company. In particular, I do not get on with Araldite because it is messy to use (or rather, I am messy when I use it) and it has too much body to make a really tight joint. My own solution is derived from Peco 'Wonderful Wagons'. Before gluing the packing pieces to the underside of the wagon, match them up to the W-irons; mark through a couple of the holes that are normally etched in the top of the fixed iron and rocking support; drill through the packing pieces, where marked, with a drill that will produce a tight fit for any convenient piece of plastic rod, and glue short lengths of rod in place, using solvent, and thread the etched brass components in place over the pieces of rod. When the solvent has thoroughly dried, melt the protruding pieces of rod into mushroom-shaped caps, using the warm end of a soldering iron, to secure the etchings to the packing. The pieces of packing, complete with W-irons, can now be spotted exactly in place on the underside of the floor and glued with plastic solvent. This method also allows the pivot for the rocking W-iron to be installed before it is fitted to the wagon, avoiding the fiddle of adjusting it, once the support is glued in place. I hope this is helpful.

*Eric J. Gates*
*Addlestone*
*Surrey*

**Kits: Manufacturers Rise Up**

As one who is fairly new to the kit manufacturing business, and who makes most of his crust in building other people's kits, I am wondering if those who criticise really appreciate what goes in to the production of a fairly simple kit. There is far more to etched kit production than merely producing the drawings, getting the resultant artwork to the etcher, and then packing the etchings along with some castings and calling the whole mess a 'kit'. Obviously, manufacturers differ in their philosophy as to how a kit should be put together, and of course this will reflect on how they design their own. For instance, why do some manufacturers pack their kits in flat boxes, and others pack them in boxes that will take the model when it is finished? I prefer to do the latter, but who is to say that I am right? Cost doesn't really come in to it as both are similar in price.

Dave Bradwell rightly says in his letter that the customer should demand quality, but at what price? There has to be a compromise on cost somewhere, and the manufacturer has to be sure that he will get back his investment on each kit otherwise he will go out of business. Most of us are one-man bands and do everything, from originating the artwork through pattern-making to sticking the label on the box lid. There's lots to do in between as well, and although it tends to get easier as more kits are produced, it is still very time-consuming.

Dave Bradwell also mentions the 'ham-fisted, professional moaners' etc. Some of these people can do the hobby a great deal of harm, as I can testify. Some time after I had brought out my first kit, the NER M/Q, a customer very kindly wrote to tell me it was the best kit he had ever put together, but the instructions weren't the best he had seen. Feeling quite pleased at this, I added to the instructions the missing bits. At my first visit to the Newcastle show a few months later, I had a chap come up to me and said that he would like to buy one of my kits, but he had heard that it 'didn't go together very well'. This just goes to illustrate how a kit and/or the manufacturer can get a bad name. Although he can design the kit with as many fold-up parts as possible, together with tab and slot construction, if the modeller can't solder joins at a right-angle, then what can the manufacturer do? The modeller, probably unaware of his own shortcomings, will lay the blame squarely on the manufacturer, whether it is a fair criticism or not.

It is also very easy to say that such-and-such should be included in the kit, but again different manufacturers have their own ideas. For example, I have just finished a GWR 45XX kit from a manufacturer acknowledged as one of the best. Although extremely time-consuming, the finished result is very pleasing. However, I found that the construction of the cylinder assembly particularly irksome. Whilst I can understand the manufacturer wanting to etch as much as possible, because this will cost him nothing apart from negligible drawing time, this doesn't help the modeller who, although fairly competent, may struggle to get a nice true assembly. Bearing in mind that there are no less than 50 parts to the assembly, wouldn't at least some of these be better as lost wax castings? In this way the manufacturer will take away one of the most time-consuming and difficult parts of the kit, with no loss of accuracy (assuming that the patterns were made properly).

Finally, the sum of £400 has been mentioned as the cost of preparing kit instructions, which I would think is fairly modest. Stewart Hine thinks that 'spread over any reasonable expectation of sales, this surely means an additional cost of a couple of pounds at most'. Sorry, Stewart, but you are way off the mark. I would love to think that I would be able to sell at least 200 kits every time one is introduced. I am sure that none of the 'one-man bands' include the true cost of their time in each kit produced never mind just the cost of the instructions. Stewart may enjoy drawing exploded perspectives, but not everybody has his technical skill or knowledge. Is it better to leave out the exploded view knowing that it is poor, or leave it in and then let the whole world criticise you for it?

*Stephen Barnfield*
*Peterborough*

*We received a similarly full letter from Andy Beaton of Hastings making much the same points. (Editor)*

I have followed the correspondence on kits with some interest, and note the latest batch of letters in MRJ No. 52. While in general I agree with Dave Bradwell's sentiments, I think he has overlooked one important aspect. In the brave outside world of consumer goods and services there are varying degrees of competition which keep manufacturers and retailers on their toes regarding customer satisfaction. For example, if you want a dishwasher, video, etc. the high street electrical shops will fall over themselves to sell to you. For each item there are several dozen manufacturers but their products, while differing in detail, are substantially identical in appearance and purpose. It matters not whether your CD player is Sharp, Sony, Philips or JVC – they all do the same job.

Things are different when it comes to model kits. The modeller is normally not in the market for just any kit out of the hundreds available; he is not even looking at a range of different kits within a specific type and/or manufacturer and/or price bracket. He wishes to build a specific item of stock and, with a few notable exceptions, there will be just one kit available for his selected subject. The choice is thus much simpler – buy the kit, however bad it may be, or don't. I think we must accept that the market for specialist model railway equipment will never be truly competitive, and that most of the products we need will be available only from a single source.

Having written or assisted with the preparation of kit instructions myself, I can vouch for the fact that it is time-consuming, and familiarity with the product can so easily lead to some essential information being omitted. The most foolproof method is to get someone else to build the kit purely from the instructions before it goes on the market – this will soon reveal any shortcomings which can be corrected before the kit goes on sale.

*Allan Sibley*
*Royston*
*Hertfordshire*

I have followed the kits debate with some interest and, dare I say, can find nothing with which to disagree in any of the points raised by any of the correspondents. Yes, kits with inadequate instructions are no good and yes, instructions can cost a lot of money to produce. I remember reading the adverts for the so-called Limited Edition kits during the early '80s: "Only 800 being made!" proclaimed the blurb, when most kits did well if they sold 50. So manufacturers really don't have a large scale of production to justify expensive instructions.

Nonetheless, badly written or produced instructions are just no good, as the market keeps saying, and not even a good modeller can find his way past some of them. Manufacturers *have* to do better, and I'm glad that kit reviewers now place much greater emphasis on the quality of instructions.

Most instructions could be improved simply by editing and better layout – I don't believe it's always necessary to have exploded illustrations as per Airfix of old. I would strongly recommend any manufacturer to have his instructions checked by another person before issuing them, even if another person wrote them on his behalf. The other person sould be 'someone knowledgeable about instructions', which usually means a technical author (£20 an hour, minimum charge £50, quality variable). But, surely, everybody knows *someone* who can write? What about our more esteemed modelling authors who probably wouldn't think of charging for an hour's work?

No matter how good the words and drawings are, bad reproduction can lose the message. A little thought, a little space, a good typewriter, and a photocopier are all that's needed.

Those who don't have these facilities, or those who want desktop publishing, could contact me! I'll offer free advice (SAE please) to any kit producer who wants it. For those who want production assistance, I'll offer a rate which will give my accountant a heart attack. I shall, of course, expect the manufacturer to have a worthwhile product and to do much of the work himself.

It's an open offer – good instructions pay for themselves.

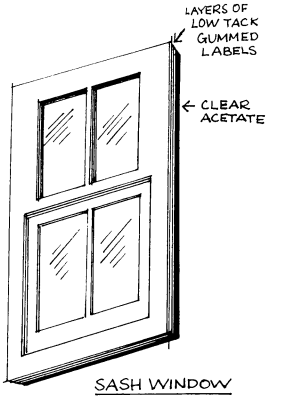
*Monty Wells*
*3 Westover Court*
*Churchdown*
*Gloucester GL3 2AA*

Having been connected with design in many engineering disciplines, I am acutely aware of the effects, both in personal and financial terms, of errors in manufacturing information. There is, generally, no such solution as 'compromise' and kits do not appear to be checked out before committal to make. So far as losers are concerned, the 'other side of the coin' is for manufacturers of sub-standard work to be avoided by would-be buyers who do not want hassle. This happens in all product areas and the winners, inevitably, are those combining efficiency, quality and accuracy. How many suppliers have come and gone since the art of making whitemetal components began? I can record a number of instances of parts missing and, with this in mind, do a rigid check in case replacements become an embarrassment!

*R. E. Ellwood*
*Hatfield*
*Hertfordshire*

**CRISP WINDOW FRAMES**

*(see A. A. Freestone's letter on opposite page)*



# DIARY

APRIL

4 **Northampton & District Model Railway Club** exhibition at St. Giles Church Hall, St. Giles Terrace (off Abington Street), Northampton. 10.00 – 5.30. £1.20/60p/£3.00.

4 **Talyllyn Railway Preservation Society** (Wessex Area) exhibition at Ferneham Hall, Fareham, Hampshire. 10.15 – 5.00. £1.50/75p/£4.00.

11 **Liphook & District Model Railway Club** exhibition at The Bohunt Centre, Longmoor Road, Liphook, Hampshire. 10.30 – 4.30. £1.50/80p/£3.50.

11 **Manchester Model Railway Society** annual auction at Dean Hall, Mersey Road, Sale, Cheshire. 2.30 p.m. Free, all welcome.

11/12 **Stourbridge Railway Society** (with Stourbridge Navigation Trust) exhibition at The Bonded Warehouse, Canal Street, Stourbridge, West Midlands. 10.00 – 5.30. £1.00/50p.

11/12 **Heathcote O Gauge Society** exhibition at Humphrey Perkins High School, Cotes Road, Barrow-upon-Soar, near Loughborough, Leicestershire. 10.00 – 5.30 (5.00 Sun). £1.50/50p/£3.00.

17-21 **York Model Railway Club** *(with The Yorkshire Post)* 30th anniversary show at Main Building, York Racecourse (with bus service between York station, show and NRM). 10.00 - 7.00 (6.00 Tues, 5.00 Sun). £3.00/£1.50/£7.50. Watch out for MRJ featured layouts 'Lydham Heath', 'Corris', 'Benfieldside', 'Penny Hassett' and 'Copenhagen Fields'.

18 **BRSA Enfield Model Railway Club** exhibition at the BRSA Sports Pavilion, Holtwhites Hill, Enfield, Middlesex (near Gordon Hill BR station). 10.30 – 5.00. £1.00/50p.

25 **Stowmarket Railway Club** model railway exhibition at the United Reform Church Hall, Ipswich Street, Stowmarket, Suffolk. 10.30 – 5.30. £1.00/60p.

24-26 **Macclesfield Model Railway Group** 21st anniversary exhibition at Ryles Park School, Macclesfield, Cheshire. 4.00 p.m. – 10.00 (Fri), 10.00 – 7.00 (Sat) and 10.00 – 6.00 (Sun). £1.50/75p/£3.50.

25/26 **St. John's (Mickleover) Model Railway Group** eleventh Derby exhibition at the assembly rooms, Market Place, Derby. 10.30 – 8.00 (Sat). 10.00 – 5.30 (Sun). £3.00/£2.00/£8.00.

MAY

2/3 **Bexhill Model Railway Club** exhibition at Bexhill College, Bexhill-on-Sea, East Sussex. 10.30 – 5.30. £1.50/£4.00.

2-4 **Wolverhampton Model Railway Club** exhibition at Pendeford High School, Marsh Lane, Fordhouses, Wolverhampton (1 mile from M54, Junct 2). 2.00 – 8.00 (Sat), 10.30 – 6.30 (Sun). 10.30 – 5.00 (Mon). £1.60/80p/£4.00.

9/10 **Southtrak Model Railroad Club** (with Highfield Junior School) at the School, The Hydne, Hampden Park, Eastbourne, East Sussex. 10.30 – 5.30 (5.00 Sun). £1.50/75p/£4.00.

9/10 **Middlesbrough Model Railway Club** exhibition at Newport Settlement Community Centre, Union Street, Middlesbrough, Cleveland. 10.00 – 5.30. £1.50/75p/£4.00.

16 **Lutterworth Railway Society** exhibition at the Grammar School, Bitteswell Road, Lutterworth, Leics. From 10.30. Admission not advised.

23 **Dennington Village Hall** Model Rail & Steam Exhibition at the Village Hall, Dennington (on A1120, near Framlingham), Suffolk. 10.30 – 5.30. £1.00/50p/£2.25. A beautiful spot for a spring drive out!

23-25 **Bridlington Model Railway Society** East Yorkshire Model Railway Show at the Marine Room, The Spa, Bridlington, North Humberside. 10.00 – 6.00. £1.00/50p/£2.70.

## HISTORICAL MODEL RAILWAY SOCIETY

### Meetings for April 1992

*North West Area:* Wednesday, 8th April 1992. Members Evening. 7.30 at Grango School, Rhos, Clwyd.

*East Midlands Area:* Thursday, 9th April 1992. The S & MJR, Richard Allen. 7.45 in the Red Lion, Ruddington.

*Scottish Area:* Saturday, 11th April 1992. Track and Pointwork. 2.00 – 5.00 at Woodlawn, Philipstoun, West Lothian.

*Wessex Area:* Saturday, 11th April 1992. Ringwood, LSWR, A.W. Fry. 2.30 at the 'Elm Tree', Hightown, Ringwood, Hants.

*London Area:* Monday, 13th April 1992. Library Night. 6.30 at Keen House, 4 Calshot Street, London N1 9DA.

*Essex Area:* Friday, 24th April 1992. Swindon Works, David Hyde. 7.30 at St. Mary's Church Centre, Great Baddow, Chelmsford.

*Worcester Area:* Friday, 24th April 1992. Art work/etching rolling stock, Peter Korrison. 7.30 at Ye Olde Talbot Hotel, Friar Street, Sidbury, Worcester.

*Bristol Area:* Saturday, 25th April 1992. Modelling buildings Pendon Style, Peter Williams. 2.30 in the Somerset Room, Saltford Hall, Saltford near Bristol.

*Thames Valley Area:* Monday, 27th April 1992. BR Wagons 1970-90, Paul Bartlett. 8.00 at the Bracknell Railway Society Clubroom, Pinewood Leisure Centre, Old Wokingham Road, Crowthorne.

*Bedford Area:* Wednesday, 29th April 1992. Midland & Great Northern in 7mm scale. 7.30 at the Milton Keynes Model Railway Clubroom.

### Meetings in May 1992

*Sussex Area:* Friday, 8th May 1992, Caledonian Railway, Niall Ferguson. 8.00 at London Road Station, Brighton.

*Scottish Area:* Saturday, 9th May 1992. Train Service Modelling. 2.00 – 5.00 at Kilmacolm.

*Wessex Area:* Saturday, 9th May 1992. The S & DR northern extension, Chris Handley. 2.30 at the Eastleigh Railway Institute, 2 Romsey Road, Eastleigh, Hampshire.

*London Area:* Monday, 11th May 1992. Tracing locomotive development through models, Michael Uridge. 7.00 at Keen House, 4 Calshot Street, London N1 9DA.

*North West Area:* Wednesday, 13th May 1992. The Festiniog Railway, Laurence Wheeler. 7.30 at Caldy Valley Centre, Chester.

*Worcester Area:* Friday, 15th May 1992. Model loco construction, Keith Bucklitch. 7.30 at Ye Olde Talbot Hotel, Friar St., Sidbury, Worcester.

*Thames Valley Area:* Monday, 18th May 1992. The Broad Gauge. 8.00 at Bracknell Railway Society Clubroom, Pinewood Leisure Centre, Old Wokingham Road, Crowthorne.

*Bedford Area:* Wednesday, 27th May 1992. Metropolitan Miscellany. 7.30 at the Addison Centre, Kempston.

*Bristol Area:* Saturday, 30th May 1992. The S & DJR before 1930, Richard Dagger. 2.30 in the Somerset Room, Saltford Hall, Saltford, near Bristol.

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*Continued from page 101*

or a kit for a Manning Wardle! There is, though, a tendency to use new materials for quite unsuitable purposes and there are also some badly researched, designed and produced kits on the market, and these don't do the hobby any good at all.

Have I met the requirements set out in my original specification? Again, I think the answer is 'Yes', but with some qualifications. The areas where I've fallen farthest behind my ideal are the logistical ones. The layout is far too heavy to lug very far, particularly where stairs are involved; it is kept upstairs at home, which doesn't help. Being 13 years older than when I started the present version doesn't help either! The layout also takes longer to erect and dismantle than I would have liked. How I envy those who have their layout packed up and are driving away when we are still taking the loose scenic items off! Apart from those points, I'm happy with the layout. Perhaps because it is always spring and the sun is always shining, I find it a cheering sight to look at on a dull day!

'Maidstone Road III' has now been to 70 exhibitions, so it must be nearing the end of its exhibition career. It has given Doreen and me a lot of pleasure and, we hope, has given pleasure to others but I think the 'Maidstone Road' theme is now exhausted so I don't expect there will be a 'Maidstone Road IV'. I am tempted to do something completely different. I have dabbled in 7mm scale in the past, both standard and narrow gauge, so that is a possibility. I am also tempted to do something in complete contrast, like an urban section of a main line. However, it would seem a shame to waste my present stock — there's quite a lot of it, and a lot more in boxes, not yet built — so I expect something of a Colonel Stephens' nature will emerge after all. There, I said the Light Railway bug could never be cured!

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NBR J36 £70 (£82) . . . . . LNW Crewe 0–6–0 £55 (£66)
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**LMS:** 50' Full Brake dia. 1778; S & DJR Bogie Brake 3rd; S & DJR Bogie Compo; S & DJR Bogie 3rd Lav; S & DJR 6 wheel Picnic Saloon; S & DJR 6 wheel Compo; LNWR Steam Railmotor; NLR/LNWR 0–6–0T; LNWR 50' Motor Driver; LNWR 42' Van.

**LNER:** Claud Hamilton D16 4–4–0; Gresley 61' 6" Full Brake.

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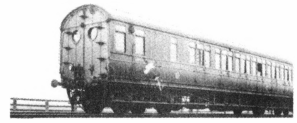

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# Malcolm Mitchell Design

*This picture shows a 68XX 'Grange' class 4–6–0 built from 4mm kit (Ref. 4MDL/3).*
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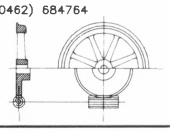

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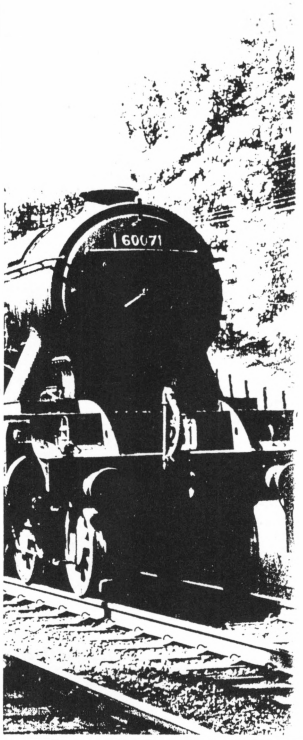


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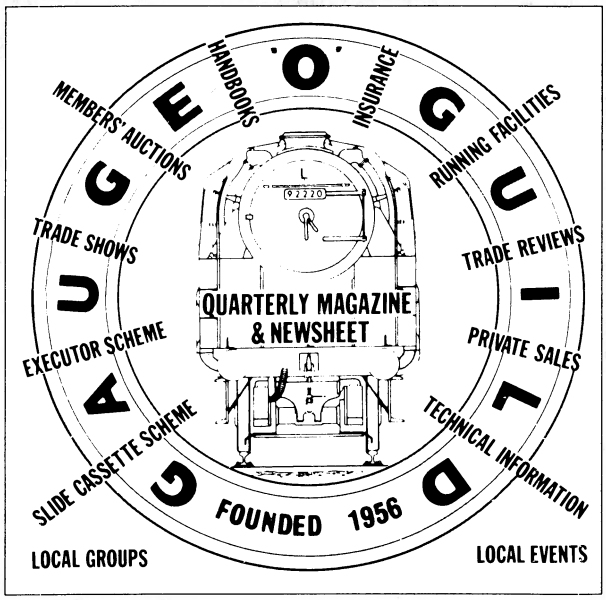


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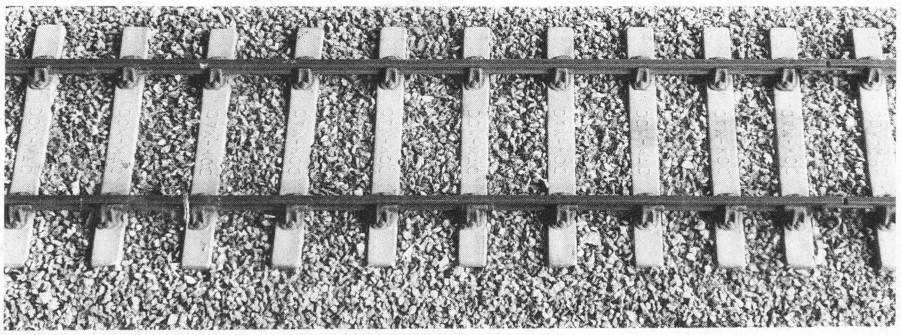

DETAILS SHOWN ARE IN 4mm TO 1ft SCALE

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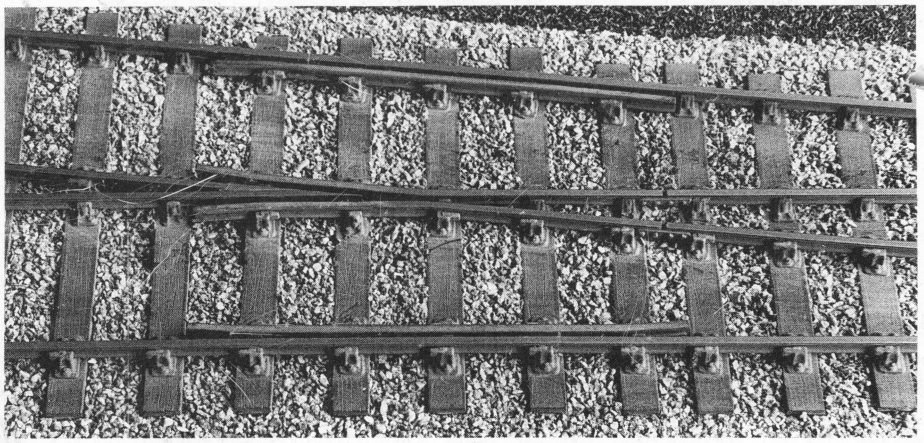

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